

ANNALS MEDEDELINGEN
OF THE VAN HET
TRANSVAAL MUSEUM

VOLUME IX

PART 2 *containing*

THE SPHEGIDAE OF SOUTH AFRICA.

By GEORGE ARNOLD, D.Sc., A.R.C.Sc., F.E.S.

NEW FORMS OF LASIOCAMPIDAE FROM
THE TRANSVAAL MUSEUM.

By CHR. AURIVILLIUS.

Issued October 30, 1922

PRINTED AT THE UNIVERSITY PRESS

CAMBRIDGE, ENGLAND

1922

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PART I

With 22 figures

NO comprehensive work dealing with Sandwasps of the Ethiopian region, or of any of its subregions, has yet been published. Certain groups of the family have been very fully monographed by Kohl and Handlirsch. These are, the *Bembex* group, "Die mit *Nysson* und *Bembex* verwandten Grab-wespen," by Handlirsch (1887-1895) and the two monographs on *Ampulex* (1893) and the Sphecinae (1890) by Kohl¹. Although many new species have been described since their publication, yet those works are still indispensable for the study of the genera with which they are concerned. The genus *Tachytes* has been revised by R. E. Turner, and a few short papers by the latter author, by Dr H. Brauns and by Peter Cameron complete the list of the larger and recent works which relate to the South African Sphegidae. For the rest, the descriptions of species are scattered through numerous entomological journals, of which many are not easily available to the general student. Moreover, the majority of the descriptions of the older authors are insufficient, lacking in definition or based too much on colour differences to be of much value at the present time. In order, therefore, to lighten the study of our Sandwasps, it seems desirable to put together in monographic form a systematic and descriptive account of all the species now known to us. It will therefore be my endeavour gradually to do this for all the groups of the Sphegidae as defined by Kohl, with the exception of the Bembecinae, Sphecinae and Ampulicinae. The latter, having been so fully treated in the works previously mentioned, require

¹ A bibliography of the more important works dealing with the S. African Sphegidae is given on page 104.

only to be brought up to date by the revision of the analytical keys to the species, and by the addition of descriptions of those species made known since those monographs were published.

In view of the fact that the distribution of some species is very wide, and that not a few species originally recorded from the tropical belt have also been found in the South African region, it seems that the usefulness of this work would be impaired by limiting it to only those species which have been recorded from South Africa. I have, therefore, included all the Ethiopian forms known to me in nature, or of which clear specific descriptions are available.

In 1896, F. F. Kohl laid the foundation of our modern conceptions of the classification of the Sphegidae by the publication of his masterly work, *Die Gattungen der Sphegiden*, which is indispensable to the serious student. In the following pages the diagnoses of the genera and the analytical key to the latter are based mainly on those of Kohl. I have, however, made some additions and alterations, to which the following remarks apply.

The presence or absence of the episternal suture is a character which is emphasised by Kohl and is undoubtedly of importance, but since it is not easily seen in small species and even in large ones, may be obscured by the pilosity and pubescence, I have thought it advisable not to lay too much stress on it in the diagnoses of the genera.

As a generic character the venation of the wings is of great value, but on the other hand, it is of very little use in the differentiation of species. Far too much weight has been placed by some authors on minute differences in the venation for the separation of species, such as the comparative lengths of the abscissae of the radial and cubital veins, and the position of the recurrent veins at their junction with the cubitus. A little consideration will show that these differences, *when not strengthened by other structural characters*, can be of but little value for the distinction of species, for if they be but slight, they fall within the limits of variation common to all species, and if very large, the type of venation characteristic of the genus would be departed from. Moreover, the examination of large series will in nearly all cases show not only that such minor differences are constantly present within a species, but that sometimes the venation may differ on the two wings of the same individual.

In the enumeration of the abdominal segments Kohl adopts a method, which, though strictly correct, is very confusing. The epinotum being morphologically the true 1st abdominal tergite, he numbers the segment succeeding it the 2nd abdominal segment, and since no ventral plate or sternite belonging to the epinotum has yet been demonstrated, he terms the 1st ventral plate, that one which is attached to his 2nd segment. This system of enumeration is needlessly confusing and is followed by hardly any other hymenopterologist. In the following pages the epinotum is treated generally as a part of the thorax, as it appears to the eye, and the segment succeeding it is called the 1st abdominal segment, composed of the 1st tergite and 1st sternite.

The genus *Motes* Kohl cannot, in my opinion, be regarded as more than a subgenus of *Notogonidea*, for reasons which I shall indicate when dealing with species of which it is composed. I am also inclined to the

view that *Notogonidea* itself should be considered as only a subgenus of *Liris*, but for convenience in the determination of species I have retained it as a distinct genus in these pages.

The Sphegidae form the third family of the Fossorial Hymenoptera, and are distinguished in structure from the other two families, the

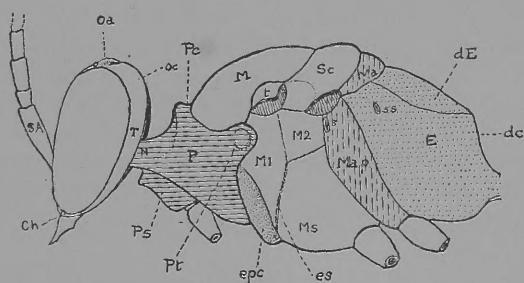
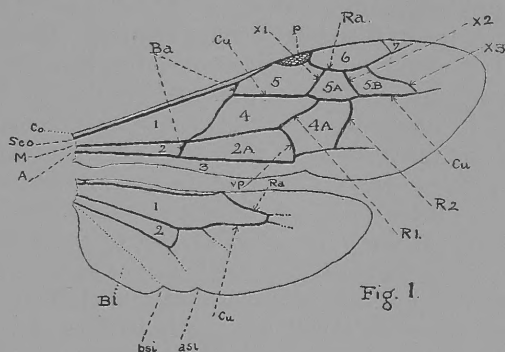


Fig. 1. Front and hind wings. Co, costa; Sco, subcostal vein; M, median vein; A, anal vein; Ba, basal vein; Cu, cubital vein (cubitus); Ra, radial vein (radius); X1, X2, X3, first, second and third transverse cubital veins; R1, R2, first and second recurrent veins; Vp, vena postica; P, pterostigma; 1, medial cell; 2, submedial cell; 2A, brachial or second submedial cell; 3, anal cell; 4, first discoidal cell; 4A, second discoidal cell; 5, 5A, 5B, first, second and third cubital cells; 6, radial cell; 7, accessory cell of the radial cell; BI, basal lobe of hind wing; asi, anal sinus; bsi, basal sinus.

Fig. 1 a. Head and thorax of a Sphegid. diagrammatic. SA, scape; Oa, ocellar area; T, temple; ch, cheek; oc, occiput; P, PRONOTUM; Pc, collar or posterior portion of the pronotum; Pt, pronotal tubercle; N, neck of pronotum; Ps, prosternum; M, MESONOTUM; Sc, scutellum of mesonotum; t, tegula; epc, epicnemium, a flattened surface to accommodate the anterior femur (not always present); M1, episternum of mesothorax; M2, epimerum of mesothorax; Ms, sternum of mesothorax (these three parts M1, M2 and Ms and also Ma, p, are referred to sometimes collectively as the "mesopleurae" to simplify description); es, episternal suture; Ma, p, METANOTUM; Ma, p, metapleurae; E, EPINOTUM; dE, dorsum of epinotum; dc, declivity of epinotum; s, stigma or spiracle of metathorax; ss, stigma of epinotum.

Scoliadae and the Psammocharidae (*olim* Pompilidae) by the short pronotum, which on the dorsal surface does not reach back to the tegulae.

In habits the Sphegidae differ from the other families of the Fossores chiefly in the nature of their prey. Whereas the Psammocharidae prey chiefly, if not exclusively, on spiders (excepting parasitic genera like

Ceratopales), and the Scoliadæ prey on Coleopterous larvae, Lepidopterous pupae and sometimes other Aculeate Hymenoptera, the Sphegidae prey on Orthoptera, Diptera, caterpillars, Hemiptera and Hymenoptera, and in only a few species do spiders form the food of the larvae.

Of the habits and prey of our Sphegids very little is known, and indeed the only published observations of which I have any knowledge are those of Dr Brauns in his short papers entitled "Biologisches ueber südafrikanische Hymenopteren." However, the life-histories of many species of European and North American Sphegidae have been admirably portrayed in the pages of Fabre, the Peckhams and others, and it is to them that the reader should turn for fuller information.

The females prey on insects or spiders for the purpose of making provision for their future progeny. The prey is usually paralysed by stings in one or more of the nerve ganglia, but in some cases (*Bembex*) the prey is killed outright and carried to the larvae as often as is required. In the former case, the requisite number of victims having been obtained and paralysed and stored in a cell, an egg is laid by the mother wasp, who then closes the cell and pays it no further attention. The form and situation of the nests show considerable diversity. The majority of our sandwasps make burrows in the soil, preferably of a sandy nature, but some utilise the deserted burrows which have been made by other insects in wooden logs or dead trees, and a few construct cells of clay.

The material which I have had at my disposal consists of the collections of the Rhodesia Museum, of Dr H. Brauns (Willowmore) and of the Transvaal and Albany Museums. The small collection of the Durban Museum has also been examined. My thanks are particularly due to Dr Brauns for the gift of numerous specimens and for the generous loan of the greater part of his extensive collection which contains the types of so many rare species.

I have also compared many doubtful species with the types in the collection of the British Museum. Unless otherwise indicated, the descriptions in the following pages have been drawn up afresh by myself from material in the collection of the Rhodesia Museum. In a few cases in which the species are unknown to me in nature, I have copied the authors' original descriptions, and in others the description is based on the unique type-specimens belonging to other collections.

All species represented in the Transvaal Museum collection are indicated by the letters T.M. after the descriptions; and in the Rhodesia Museum collection, by the letters R.M.

A LIST OF THE LARGER PUBLICATIONS DEALING WITH THE ETHIOPIAN SPHEGIDAE

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- TURNER, R. E. A Revision of the Wasps of the Genus *Tachytes* inhabiting the Ethiopian Region. *Ann. Mag. N. H.* Vol. xx (VIII), No. 115, pp. 1-43. 1917.
- SMITH, F. *Cat. Hymenoptera* in coll. British Museum, Part 4. 1856.

KEY TO THE ETHIOPIAN GENERA OF *SPHEGIDAE*

- (4) 1. Inner margin of eyes deeply sinuate (reniform); radial cell of forewing not appendiculate (*i.e.* the cell is not divided into two by a transverse truncation). If three cubital cells are present, the second is triangular and stalked. Front tarsi without a comb. Middle tibiae with only one spur.
- (3) 2. Three cubital cells present; abdomen not elongate, usually more or less constricted between the segments. *Pison* Jurine.
- (2) 3. One cubital cell present; abdomen elongate. *Trypoxylon* Latr.
- (1) 4. Inner margins of the eyes not deeply sinuate, if slightly so, then three cubital cells are present and the second is not stalked. Front tarsi with or without a comb. Middle tibiae with or without a spur, or with two.
- (33), (20) 5. Only one cubital cell present.
- (11) 6. Radial cell not appendiculate; middle tibiae with one spur; inner orbits parallel, or convergent towards the vertex.
- (8) 7. The pronotal tubercles extend back as far as the tegulae. Pygidial area defined in the ♀. Mandibles not excised on the outer margin. Anterior wing with a very large stigma and only one distinct discoidal cell. Small species. *Ammoplanus* Giraud.
- (7) 8. Pronotum short, the tubercles not reaching the tegulae. No pygidial area. Mandibles excised below.
- (10) 9. No distinct stigma in forewing; only one closed cubital cell and one discoidal. (Like a small *Salix* in appearance.) *Salioesthus* Brauns.
- (9) 10. A small stigma present, and two distinct discoidal cells. *Miscophus* Jurine (*Handlirschii* Kohl group.)
- (6) 11. Radial cell appendiculate.
- (13) 12. Venation of hindwings almost completely extinguished. The eyes do not quite reach the base of the mandibles. The tubercles of the pronotum reach the tegulae. A distinct pygidial area wanting. Middle coxae almost touching each other (anterior tarsi without a comb). *Nitela* Latreille.
- (12) 13. Venation of hindwings distinct. The lower margin of the eyes touching the base of the mandibles. The pronotal tubercles do not reach the tegulae. A distinct pygidial area present. Middle coxae well separated and sunk in the sternum.

- (17) 14. The cubital vein extinguished, so that the cubital and discoidal cells appear confluent. Postscutellum with lamellar expansions on each side. Epinotum above produced into a more or less curved or spout-like mucro. (Anterior tarsi with a comb.)
- (16) 15. Mandibles not excised on their lower margin. Abdomen conical, the tergites normal. *Oxybelus* Latr.
- (15) 16. Mandibles excised on their lower margin. Abdomen oval, the tergites, at the point where they fold under, forming a sharp edge, so that the ventral plates or sternites appear much smaller than in *Oxybelus*. *Oxybelomorpha* Brauns.
- (14) 17. Cubital vein not extinguished between the cubital and discoidal cells. Postscutellum and epinotum simple.
- (19) 18. Mandibles simple at the apex. ♀ and ♂ with a distinct pygidial area. Abdomen conical. Head and thorax coarsely punctured. *Encopognathus* Kohl.
- (18) 19. Mandibles with three teeth at the apex; ♀ with a narrow and excavated pygidial area, the ♂ without a pygidial area; abdomen clavate, the first segment petioliform. Head, mesothorax and abdomen microscopically punctured and dull. *Dasyproctus* Lep.
- (5), (33) 20. Two cubital cells present.
- (24) 21. Middle tibiae with two spurs. (Two distinct recurrent veins present.)
- (23) 22. Abdomen petiolate, the petiole two-jointed, the first joint formed by the sternite only of the first segment, the second joint formed by the tergite of the same. Anterior tarsi with a comb. Claws without teeth. Radial cell not appendiculate. Both recurrent veins enter the second cubital cell. *Sphex* L., subgenus *Coloptera* Lep.
- (22) 23. Abdomen subpetiolate, the petiole one-jointed and formed by both the sternite and tergite of the first segment. Anterior tarsi without a comb. Radial cell appendiculate. Claws unidentate. The first recurrent vein enters the first, the second enters the second cubital cell. *Ampulex* Jur., subgenus *Rhinopsis* Westw.
- (21) 24. Middle tibiae with one spur.
- (26) 25. Radial cell appendiculate. (Second cubital cell sessile and receiving both recurrent veins.) *Gastrosericus* Spinola.
- (25) 26. Radial cell not appendiculate.
- (28) 27. Second cubital cell stalked. Mandibles excised on the lower margin. *Miscophus* Jurine.
- (27) 28. Second cubital cell sessile. Mandibles entire.
- (32) 29. Two distinct recurrent veins present.
- (31) 30. Posterior tibiae without spines. No pygidial area. Abdomen subpetiolate. *Passaloecus* Shuckard.
- (30) 31. Posterior tibiae spinose. A triangular pygidial area defined. Abdomen not petiolate. *Diodontus* Curtis.
- (29) 32. Only one recurrent vein present, entering the first cubital cell. (Abdomen petiolate; the ♀ with a more or less distinct pygidial area; the ventral plate of the eighth abdominal segment in the ♂ produced into a spine.) *Stigmus* Jurine.
- (5), (20) 33. Three cubital cells present.
- (35) 34. Labrum exserted, exceptionally large, rostriform or snout-like, the exposed portion at least as long as the clypeus. (Tarsal comb always present in the ♀; both recurrent veins received by the second cubital cell; stigma of wing small and indistinct; at least the posterior pair of ocelli flat; middle tibiae with two spurs, one of them sometimes very fine and not easily perceived.) *Bembex* Latr.
- (34) 35. Labrum normal and covered by the clypeus, or if exserted, shorter than the clypeus.

- (79) 36. Middle tibiae with one spur.
- (38) 37. Abdomen petiolate, the petiole composed of the sternite only of the first segment; seventh ventral plate of the ♂ produced into a long curved spine. (Mandibles entire; epicnemium well developed; stigma of wing large; first recurrent vein enters the second cubital cell, the second enters the second or third cubital cell.)
Psenulus Kohl.
- (37) 38. Abdomen with or without a petiole; if with one, then it is formed by both the dorsal and ventral plates of the first segment.
- (44) 39. Radial cell not appendiculate, or if apparently so, then the mandibles are entire and the ocelli normal, round and convex.
- (43) 40. Second cubital cell stalked.
- (42) 41. Recurrent veins received by the second and third cubital cells. Abdominal segments constricted at the apical margins, the first segment more so than the rest, sharply delimited from them, and sometimes almost petioliform. Mandibles not excised on the lower margin.
Cerceris Latr.
- (41) 42. Recurrent veins received by the first and second cubital cells. Abdominal segments not constricted. Mandibles excised on the lower margin.
Paranysson Guerin (*Heliorycles* Smith).
- (40) 43. Second cubital cell sessile.
Philanthus Fabr.
- (39) 44. Radial cell appendiculate; ocelli normal, or flattened and indistinct. Mandibles, excepting *Liris* and some species of *Solierella* and *Palarus*, always excised on the lower margin.
- (50) 45. Posterior ocelli normal, *i.e.* more or less hemispherical.
- (47) 46. The third cubital cell as wide on the radius as on the cubitus or even wider. The third transverse cubital vein meets the radius near the end of the radial cell.
Palarus Latr. pr. parte.
- (46) 47. The third cubital cell narrower on the radius than on the cubitus. The third transverse cubital vein meets the radius some distance away from the end of the radial cell.
- (49) 48. Second cubital cell not stalked. Pronotal dorsum tuberculate at the sides and in the middle in our single species. A distinct pygidial area present in the ♀. Legs spinose. (Mandibles excised on the lower margin.)
Lyroda Say.
- (48) 49. Second cubital cell stalked. Pygidium conical, without a defined dorsal area. (Mandibles with or without an excision on the lower margin.)
Solierella Spinola.
- (45) 50. Posterior ocelli flat, elongate and indistinct.
- (52) 51. Basal lobe of hindwing much shorter than its submedial cell; the third cubital cell as wide on the radius as on the cubitus, or wider. (Second cubital cell with or without a stalk; mandibles with or without an excision on the lower margin; pygidial area distinctly defined in both sexes.)
Palarus Latr.
- (51) 52. Basal lobe of hindwing large, as long as, or longer than the submedial cell. Third cubital cell narrower on the radius than on the cubitus. Mandibles always excised on the lower margin.
- (56) 53. First abdominal segment elongate, longer than wide, subpetiolate.
- (55) 54. Face with a round central swelling *behind* the anterior ocellus. Pronotum depressed below the level of the mesonotum, its anterior portion or neck, of normal length. (Anterior margin of median area of clypeus with four teeth; tarsi and hind femora normal.)
Parapiagetia Kohl.
- (54) 55. Face without a central swelling, but with weak longitudinal tori margining the inner orbits of the eyes and with a more or less distinct transverse torus below the anterior ocellus. Pronotum depressed below the mesonotum. Tarsi long, the posterior femora emarginate behind at about the basal third and one angle of the

- emargination produced into a tooth, strong in the ♂, often blunt in the ♀, or as in *P. Kohli*, altogether wanting. *Piagetia* Ritsema.
- (53) 56. First abdominal segment neither elongate nor subpetiolate.
- (70) 57. Face with longitudinal tori margining the inner orbits of the eyes.
- (59) 58. Second cubital cell stalked. (Mandibles excised on the lower margin, the inner margin without teeth. Pronotum very short, depressed below the level of the mesonotum. Anterior tibiae spinose. Pygidial area naked. Second ventral plate of abdomen without a median longitudinal ridge.) *Laraxena* Smith.
- (58) 59. Second cubital cell not stalked.
- (63) 60. Mandibles without an excision on the lower margin.
- (62) 61. Mandibles with a tooth on the inner margin behind the middle and a strong tooth near the apex. Posterior margins of the abdominal segments depressed. Pygidial area (♀) and dorsal surface of abdomen distinctly punctured, and apart from long exerted hairs, naked and shining. Anterior tibiae not spinose. Posterior tibiae not longitudinally carinate. *Paraliris* Kohl.
- (61) 62. Mandibles in the ♂ with one dentiform angle near the base, in the ♀ with two, no tooth near the apex. Posterior margins of abdominal segments normal. Pygidial area (♀) clothed with short hairs, and its apical margin with a row of short setae. Abdomen often densely pubescent above. Anterior tibiae usually spinose. Posterior tibiae longitudinally carinate. *Liris* Fabr.
- (60) 63. Mandibles excised on the lower margin.
- (65) 64. Mandibles in the ♂ without teeth on the inner margin; scape triangularly dilated; sides of the epinotal dorsum swollen and convex, the declivity not vertical; sixth to eighth ventral segments with long fimbriae. *Tachytella* Brauns.
- (64) 65. Mandibles in the ♂ with teeth on the inner margin; scapes and spinotum normal, ventral segments without fimbriae.
- (67) 66. Mandibles with one or two teeth on the inner margin behind the middle and near the base. Pygidial area with a row of setae at the apex, often not easily observable. (Pronotum short, depressed below the level of the mesonotum. Pygidial area pubescent, rarely glabrous. Anterior tibiae rarely spinose. Posterior tibiae longitudinally carinate. Claws long, rarely dentate. Second ventral plate with a median longitudinal ridge and a flattened and dull area on each side of the same.) *Notogonidea* Rohwer (*Notogonia* Costa).
- (66) 67. Mandibles without teeth on the inner margin. Pygidial area glabrous, without apical bristles. Posterior tibiae without longitudinal carinae. Second ventral plate simple.
- (69) 68. Claws with a tooth near the middle. Pronotum less depressed below the level of the mesonotum. Anterior tibiae not spinose, the sides of the pygidial area in the ♀ parallel, or nearly so. *Notogonidea*, subgenus *Motes* Kohl.
- (68) 69. Claws unarmed, not very long. Anterior tibiae sometimes spinose. Sides of pygidial area convergent behind. *Larra* Fab.
- (57) 70. Face without longitudinal tori margining the inner orbits of the eyes.
- (74) 71. Face with a central swelling below the anterior ocellus.
- (73) 72. Central swelling more or less pyramidal, dull and punctured. Radial cell widely truncate, hardly longer than wide; third cubital cell very small and stalked on the cubitus. Anterior femora of the ♂ excised below near the base. *Kohliella* Brauns.
- (72) 73. Central swelling round, convex and shining. Epicnemium present. Abdomen coarsely punctured. Radial cell not very short, third cubital cell sessile, not small. Pygidial area, ♀, ♂, glabrous. (Tarsal comb of ♀ composed of long, flexible cilia.) *Prosopigastra* Costa.

- (71) 74. Face without a central swelling, at the most with two little tubercles above the antennae. Abdomen not coarsely punctured.
- (76) 75. Tarsal comb of ♀ composed of stiff and fairly short spines. Anterior femora of ♂ rarely excised below. Pygidial area in both sexes densely pubescent or bristly. Posterior ocelli elongate, flattened and retort-shaped. *Tachytes* Panzer.
- (75) 76. Tarsal comb of ♀ composed of long, flexible and thin cilia. Anterior femora of ♂ nearly always more or less excised below near the base. Pygidial area naked. Posterior ocelli flattened, oval or pyriform.
- (78) 77. Sixth tergite deeply emarginate; sting-sheath exposed. *Schistosphex* Arnold.
- (77) 78. Sixth tergite entire; sting-sheath hidden. *Tachysphex* Kohl.
- (36) 79. Middle tibiae with two spurs.
- (85) 80. Radial cell appendiculate.
- (82) 81. The first recurrent vein enters the first, the second enters the third cubital cell. First abdominal segment petioliform in its basal half. Prothorax exceptionally lengthened, the neck being nearly always as long as wide. Apical half of abdomen in the ♀ compressed laterally, acuminate. No pygidial area. No tarsal comb. The posterior abdominal segments in the ♂ often much shortened. *Ampulex* Jurine.
- (81) 82. The first recurrent vein either enters the first cubital cell or is interstitial with the first transverse cubital vein, the second recurrent enters the second cubital cell, or, both enter the second (e.g. *Astata erythropyga* Brauns). First abdominal segment not petioliform. Abdomen never compressed. A tarsal comb present.
- (84) 83. Pronotal tubercles not reaching the tegulae. Labrum large, in greater part exposed. Epinotum with a well defined dorsum. *Kohlia* Handlirsch.
- (83) 84. The pronotal tubercles reach the tegulae. Labrum not exposed. Epinotum without a distinctly defined dorsal area. (In the ♂ the eyes meet on the vertex and are unequally faceted, the upper two-thirds having larger facets than the lower third. *Dimorpha* Panzer (*Astata* Latr.).
- (80) 85. Radial cell not clearly appendiculate, although it may sometimes not end at the costal margin.
- (95) 86. Basal lobe of hindwing very large, extending beyond the submedial cell. Abdomen petiolate, the petiole formed only by the ventral plate of the first segment.
- (88) 87. The second recurrent vein usually enters the third cubital cell; if interstitial, then the first abdominal tergite is semiconical; if it enters the second cubital cell, then the first recurrent enters the first cubital cell. Tarsal comb may or may not be present. (Last joint of antenna truncate.) *Chlorion* Latr. (*Sphex* L.).
- (87) 88. The second recurrent vein enters the second cubital cell or is interstitial with the second transverse cubital vein; in the latter case the first tergite is elongate, and if not so then the ♀ lacks a tarsal comb.
- (90) 89. No tarsal comb. Last joint of antenna not truncate. (Claws without a tooth.) *Sceliphron* Klug.
- (89) 90. A tarsal comb present. Last joint of antenna truncate. (Claws with one or two teeth or with none.)
- (94) 91. First tergite of abdomen subdilated posteriorly, more or less pyriform, the petiole proper one-jointed, composed only of the first sternite.
- (93) 92. Claws bidentate; third cubital cell widest in the middle, barrel-shaped. *Sphex*, subgenus *Parapsammophila* Tasch.
- (92) 93. Claws unarmed, rarely unidentate; third cubital cell not barrel-shaped. *Sphex*, subgenus *Psammophila* Dahlb.

- (91) 94. First tergite of abdomen elongate, hardly thicker than the first sternite and of nearly the same length, and with it forming a two-jointed petiole. Claws unarmed. *Sphex* L. (*Ammophila* Kirby).
- (86) 95. Basal lobe of hindwing, when such is present, short, not extending beyond the submedial cell. Abdomen not petiolate, or if so, the petiole is one-jointed and not formed by the sternite alone.
- (97) 96. Claws toothed, often bifid. Pygidial area never present. Pronotum long. Tarsal comb absent. Posterior abdominal segments in the ♀ compressed laterally, the apex of the abdomen acuminate. In the ♂ the fourth and following abdominal segments are much shortened, the end segments invaginated into the fourth. The recurrent veins enter the second and third cubital cells.
Dolichurus Latr.
- (96) 97. Claws unarmed. Pygidial area usually present. Abdomen neither compressed in the ♀, nor shortened in the ♂. Pronotum normal, or if elongate, then the second cubital cell is stalked.
- (99) 98. Second cubital cell stalked. Distance of the radial cell from the point where the basal vein meets the subcosta is less than the length of the radial cell. Dorsum of epinotum with spines or tubercles at the posterior corners. (Stigma of wing very small. The second cubital cell receives both recurrent veins.) *Nysson* Latr.
- (98) 99. Second cubital cell not stalked, or if so (some species of *Stizus*) then the distance of the radial cell, from the point where the basal vein meets the subcosta, is much longer than the radial cell itself. Recurrent veins received either by the second, or by the first and second cubital cells.
- (101) 100. Stigma of wing well developed. Labrum not, or only very slightly, exposed. (Pygidial area usually present. Epinotum unarmed. The second cubital cell usually receives both recurrent veins.)
Gorytes Latr.
- (100) 101. Stigma of wing small, hardly observable. Labrum very large, in great part exposed.
- (103) 102. The distance of the radial cell from the point where the basal vein meets the subcosta is at least as great as the length of the radial cell, often much greater. In the ♂ the seventh ventral segment is furnished with three spines. In the ♀ the pygidial area is absent or only feebly indicated on the apical part of the segment.
Stizus Latr.
- (102) 103. The distance of the radial cell from the point where the basal vein meets the subcosta is distinctly shorter than the length of the radial cell.
- (105) 104. Ocelli almost flat and not quite round. Mandibles unarmed.
Kohlia Handl.
- (104) 105. Ocelli normal, round and convex. Mandibles with a tooth before the apex.
- (107) 106. Episternal suture and epicnemium absent. Epinotum compressed at the sides, so that the declivity is transversely concave. Cubital vein of hindwing originates a little before the end of the submedial cell.
Handlirschia Kohl.
- (106) 107. Episternal suture and epicnemium present. Epinotum not compressed laterally, the declivity rounded or only feebly concave in its middle portion. Cubital vein of hindwing originates far in front of the end of the submedial cell. Large species, 28-40 mm.
Sphēcicus Dahlb.

LARRA Group (Kohl)

CHARACTERS. Eyes large, reaching the base of the mandibles, their internal margins usually more or less convergent above. Mandibles usually excised on the lower margin (exceptions: *Liris*, *Paraliris* and some species of *Palarus*). Labial palpi 4-jointed, maxillary palpi 6-jointed. Antennae 12-jointed in the ♀, 13-jointed in the ♂. Ocelli rarely all normal, usually the posterior two are flattened and elongated, and situated on the posterior margin of a more or less round and raised area (the latter sometimes indistinct).

Head nearly always wider than the thorax. Pronotum generally depressed below the level of the mesonotum, the posterior part short, and, in those cases where the anterior portion is much depressed, the dorsal face is reduced to a mere line when viewed from above. The pronotal tubercles do not reach the tegulae. Epinemium absent or barely defined. A distinct dorsal field rarely defined on the epinotum.

Wings. The anterior wing with three cubital and two discoidal cells, except in *Gastrosericus*, in which only two cubitals are present. Posterior wing. The cubitus always arises well beyond the transverse median, *i.e.* beyond the end of the submedian cell.

Middle tibiae with one spur. Anterior tarsi usually with a distinct comb in the ♀. Pygidial area usually distinct, at least in the ♀.

This group has been divided by Kohl into subgroups, to which are attached at either end certain genera which cannot be placed with certainty in any definite group of the Sphegidae. In the following table the arrangement is substantially the same as Kohl's, but I have added to it the genera *Kohliella* Brauns, *Tachytella* Brauns, and *Schistosphex* Arnold, and following Turner, have placed *Zoyphium* within the *Sericophorus* series.

LYRODA Say

LARRA Group	Subgroup 1. TACHYTES Panz.	GASTROSERICUS Spin. *HOMOGAMBRUS Kohl. PARAPIAGETIA Kohl. PROSOPIGASTRA A. Costa. KOHLELLA Brauns. TACHYSPHEX Kohl. SCHISTOSPHEX Arnold. TACHYTES Panzer. *ANCISTROMMA Fox.
		TACHYTELLA Brauns. LARRA Fab. s. str. MOTES Kohl. PARALIRIS Kohl. NOTOGONIDEA Rohwer. LIRIS Fab. PIAGETIA Ritsema.
	Subgroup 2. LARRA Fab.	
		*LAPHYRAGOGUS Kohl. *LEIANTHRENA Bingham. *DINETUS Jurine. PALARUS Latr.
	SERICOPHORUS Sm.	*Helioryctes Sm. *Sericophorus Sm. *Sphodrotes Kohl. *Zoyphium Kohl. Paranysson Guerin.

In the above list the genera marked with an asterisk are not found in the Ethiopian region.

LYRODA Say

Boston Journal of Nat. Hist. 1, 4, p. 372. 1837.

CHARACTERS. Eyes large, oval, not emarginate, the inner orbits almost parallel, not convergent to any great extent towards the vertex. Face and vertex wide, without tori or swellings. Ocelli normal, round and convex, spaced in a wide triangle. Mandibles excised on their outer margins. Pronotum depressed and narrowed into a neck in front, the dorsal face of the posterior portion or collar excavated on each side of the middle, thereby forming three more or less backwardly directed humps or tubercles. Epinotum fairly long, the declivity vertical. First abdominal segment (in our only African species) subpetiolate. Pygidial area distinct in the ♀, triangular, pilose and marginate at the sides, in the ♂ trapezoidal. Middle tibiae with one calcar or spur. The tarsi and the middle and hind tibiae spinose. Claws unarmed, pulvilli large. Anterior tarsi with short spines which barely form a comb. Anterior wing with the radial cell truncate and appendiculate; three cubital cells, the first somewhat larger than the other two combined; the second is considerably narrowed towards the cubitus, and the third is only slightly produced outwardly and without the tongue-like extension seen in *Notogonidea* and *Tachysphex*. The basal vein meets the subcostal not far from the pterostigma, being much closer to that than it is in the genera of the *Larra* group s. str. The basal lobe of the hindwing ends at about the middle of the anal margin, so that the basal sinus is some considerable distance from the anal sinus.

This is a small genus comprising nine species, of which one is Australian, one Ethiopian and the rest American. Nothing is known of their life-history.

L. aethiopica Kohl (Figs. 2, 3). *Ann. K. K. Nat. Hist. Mus. Wien.* 19, 294, ♀. 1894.

♀, 10 mm. long. Black; mandibles, last joint of the tarsi, calcaria and spines piceous ferruginous, the last two abdominal segments brownish red.

Clypeus, face, back of the head, the pronotum and mesonotum with a fine pale silvery pubescence which is longest on the clypeus and on the lateral and posterior margins of the pro- and mesonotum; the sides of the epinotum very finely pubescent, a more or less trapezoidal area on the dorsum of the epinotum, the scutellum and metanotum glabrous. Legs and apical margins of the first three abdominal segments with a fine and very short silvery pubescence which forms transverse fasciae on the segments.

Dorsum of epinotum with a fine median carina just reaching the apex, dull, reticulate rugose, the rugae chiefly transverse, the declivity more finely rugose, the sides very finely punctured and also obliquely striate behind at the upper margins; the rest of the thorax and the head dull, very closely and finely punctured. The posterior corners of the epinotum are margined by feeble carinae. Abdomen dull, the sculpture microscopic.

Clypeus wide, its anterior margin convex and (under a high magnification) feebly crenulate, the crenulations produced into three very small teeth on each side. Inner orbits almost parallel, the distance between them on the vertex equal to the combined lengths of the first three joints of the flagellum. Second joint of flagellum a little longer than the third, nearly three times longer than the first. A longitudinal impressed line runs from the back of the clypeus to the anterior ocellus. Ocellar area not tumid. Median tubercle of the pronotum higher than the lateral ones. The suture between the mesonotum and scutellum deeply clathrate. Dorsum of epinotum as long as the mesonotum, its apical third or so sloping more steeply than the rest. Abdomen oblongo-ovate, the first segment subpetiolate, longer than wide across the apical margin. Pygidial

area elongate triangular, about half as long again as wide at the base, clothed with short yellowish hairs which become golden on the apical half, and intermixed with a few long setae. First joint of the anterior tarsi with six short spines. Wings hyaline, feebly smoky. (In the type of the species there is a feeble cloud of darker colour on the second and third cubitals and the second

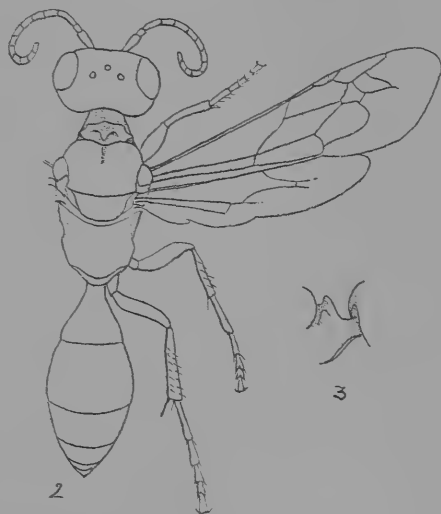


Fig. 2. *Lyroda aethiopica*, ♂.

Fig. 3. Pronotum of same, seen from the side.

discoidal cell, this is absent in the ♀ before me, but present in the ♂.) First abscissa of radius about as long as the third, quite twice as long as the second, which is barely more than half as long as the space between the recurrent veins on the cubitus.

♂ (hitherto undescribed), 8.2 mm. Pubescence of clypeus and face pale golden. The anterior margin of the clypeus has a small rounded tooth in the middle and a dentiform angle on each side of the same, the minute crenulation and lateral teeth of the ♀ being absent. The inner orbits of the eyes as in the ♀, their distance on the vertex equal to a little more than the length of the first four joints of the flagellum. Second joint of the flagellum nearly twice as long as the first, barely longer than the third. The dorsal tubercles on the pronotum stronger than in the ♀. The first abdominal segment is a little longer and narrower at the base than in the ♀. Last dorsal segment widely rounded at the apex, clothed with pale silvery golden, thick and decumbent hairs. Wings with a slight fuscous cloud over the cubitals and second discoidal cells. Otherwise like the ♀.

Sawmills, S. Rhodesia, one ♀, one ♂, on sandy soil. December.

Apparently a very rare insect with a wide distribution, the only other record known to me being that of the type specimen (coll. Brauns), taken at Conakry, W. Africa (1892).

In general appearance not unlike a small *Notogonidea* of the *antaca* Sauss. group.

GASTROSERICUS Spinola

Ann. Soc. Ent. France, VII, 480. 1838.

Paralleloopsis Maidl. *Boll. Lab. Zool. Portici*, IX, 147. 1914.

CHARACTERS. Eyes convergent above, or (*Paralleloopsis* group) parallel or slightly divergent. Anterior ocellus round, the posterior ocelli flat, elongate and placed obliquely, the vertex transversely impressed behind them. Mandibles excised near the middle of their lower (outer) margins. Antennal joints shorter in the ♂ than in the ♀. Pronotum depressed below the level of the mesonotum. No epinemium on the mesopleurae. Epinotum without a defined dorsal field, its sides perpendicular, the declivity steep. A well-defined and pubescent pygidial area present in both sexes. Anterior tarsi of the ♀ with a comb composed usually of long, thin and soft cilia. Middle tibiae with one calcar. Claws without teeth, tibiae spinose.

Front wing: the radial cell broadly truncate and with an accessory cell (*i.e.* appendiculate). Two cubital cells, the first much larger than the second; the latter receives both recurrent veins.

Hind wing: the cubitus arises beyond the end of the submedial cell, the basal lobe long, extending beyond the submedial cell.

Hab. Palearctic, Ethiopian and Oriental regions.

Paralleloopsis Maidl, the genotype of which is *P. africanus* (which sinks as a synonym of *G. Neavei* Turner, ♂) cannot be retained as a genus, and can indeed hardly be considered worthy of subgeneric rank. Such forms as *lamellatus* and *Turneri* with their widely spaced eyes only slightly convergent above, and having the second discoidal cell almost stalked, and *laticeps* and *modestus* with parallel inner orbits, stalked discoidal and fine sculpture, make it impossible to define the limits of Maidl's proposed genus.

With the exception of one species, *simplex*, which preys on small crickets, nothing is known about the prey of these small wasps. All the species I have met with have been found nesting in sandy soil and are only to be seen flying about in the hottest sunshine.

KEY TO THE SPECIES OF *GASTROSERICUS*

- (26) 1. Inner orbits of eyes more or less convergent above.
- (19) 2. Head, thorax and abdomen black, the abdomen sometimes brown in parts, but never red.
- (6) 3. Clypeus deeply excised on each side of the median area, the excision almost reaching the posterior margin of the clypeus, the outer corner of the excision produced into a long thin spine which projects horizontally above the base of the mandibles.
- (5) 4. ♂ and ♀. Median area of clypeus porrect and lamellate, excised at the apex, the angles of the excision forming acute teeth; the anterior coxae with a thick process which is truncate at its apex and longer than the trochanter. lamellatus Turner
- (4) 5. ♂. Median area of clypeus triangularly produced, oblique and not porrect, its apex entire; anterior coxae with a low crest ending in a minute triangular and flavous tooth. bidentatus Arnold
- (3) 6. Clypeus not deeply excised, without lateral spines.
- (8) 7. ♂. Clypeus produced into a median, triangular and acute tooth; third and fourth ventral segments with transverse foveae densely fimbriated with golden hairs. lanuginosus Arnold
- (7) 8. Abdomen without foveae on the third and fourth segments.

- (10) 9. Prosternum produced on each side into a curved and acute horn, plainly visible from above. **Swalei** Turner
- (9) 10. Prosternum unarmed.
- (12) 11. Temples with a tooth on each side below; anterior coxae produced into an oblong, quadrate and thick process, directed outwards (♀). **Turneri** Arnold
- (11) 12. Temples unarmed, anterior coxae simple.
- (14) 13. Pygidial area impunctate; (second abscissa of radius at least half as long as the first, second discoidal cell not distinctly stalked). **Silverlocki** Turner
- (13) 14. Pygidial area punctured.
- (16) 15. The recurrent veins coalesce just below their junction with the cubitus, without forming a distinct stalk to the second discoidal cell; (first abscissa of radius twice as long as the second). **karrooensis** Brauns.
- (15) 16. The recurrent veins coalesce some distance below their junction with the cubitus, forming a stalk to the second discoidal cell.
- (18) 17. Head and thorax dull, closely punctured; collar of pronotum not very short; anterior tibiae and tarsi fuscous. **divergens** Brauns.
- (17) 18. Head and thorax less closely punctured, the spaces between the punctures shining; collar of pronotum linear; anterior tibiae and tarsi ochreous; (dorsum of epinotum with a distinct median longitudinal carina). **simplex** Arnold
- (2) 19. Abdomen not entirely black.
- (21) 20. Temples produced into a triangular tooth below; (first and second abdominal segments ferruginous). **Braunsi** Arnold
- (20) 21. Temples unarmed.
- (23) 22. Only the first segment of abdomen red, the rest black; pubescence short and silvery-grey. **oraniensis** Brauns.
- (22) 23. At least the first three abdominal segments red; pubescence long and of a brassy-silvery tint.
- (25) 24. All the abdominal segments red; ♀, 7.5 mm. long; ♂, 6.3 mm. **capensis** Brauns.
- (24) 25. Fourth and fifth dorsal segments in the ♀, fourth, fifth and sixth in the ♂, dark brown; ♀, 6 mm. long, ♂ 4.6 mm. **chalcithorax** Brauns
- (1) 26. Inner orbits parallel, or slightly divergent above (=subgenus *Paralellopsis* Maidl).
- (28) 27. Body entirely black, wings fuscous, puncturation very coarse, temples toothed below in the ♀, unarmed in the ♂. Clypeus produced into a spine in the middle in the ♂, into a truncated lobe in the ♀. **Neavei** Turner
- (27) 28. Abdomen more or less red, puncturation not coarse.
- (30) 29. ♂. Pubescence brassy-golden, except on the lower half of the face; clypeus produced in the middle into a short triangular spine. **laticeps** Arnold
- (29) 30. ♀. Pubescence silvery; clypeus produced in the middle into a very short rectangular lobe. **modestus** Arnold
- G. attenuatus* Turner, being unknown to me in nature, has not been included in the above key.

G. oraniensis Brauns. *Verh. Zool. Bot. Ges. Wien*, LVI, 51, ♀. 1906.

♀, 7 mm. long. Black, mandibles flavo-testaceous, the apex blackish. First abdominal segment rufous, the apical margins of the segments testaceous. Tarsi brown, anterior tibiae reddish brown, hind tibiae reddish at the apex and with a longitudinal dull flavous streak on the outer side of the basal third.

Face and clypeus silvery pubescent; the rest of the body, including the legs, covered with a very short and fine silvery-grey pubescence, slightly denser above on the apical margins of the abdominal segments and forming

inconspicuous fasciae. Pygidial area smooth, shining, sparsely punctured, elongate triangular, marginate at the sides, glabrous. Ventral segments smooth and shining. The rest of the body microscopically coriaceous-punctate and dull. Wings slightly tinged with yellowish brown, the veins brown.

Anterior margin of the clypeus arcuate. Eyes moderately convergent towards the vertex, the distance between them there equal to the combined lengths of the scape and the first joint of the flagellum. Pronotum not much depressed below the mesonotum. Declivity of epinotum rather oblique, its junction with the dorsum rounded. Tarsal comb composed of five fairly stout spines. Inner calcar of hindleg a little longer than the metatarsus.

Bothaville, O.F.S. Type in coll. Brauns.

G. chalcithorax Brauns., nom. in litt. Brauns.

♀, 6 mm. long. Mandibles flavous, the apices piceous. Head and thorax black, the pronotal tubercles and tegulae dull straw-yellow. Abdomen ferruginous (pale burnt sienna) and paler towards the base, the apical segment brownish red, the base of the fourth and fifth dorsal segments dark brown, the apical margins of all the segments widely flavescent. Tibiae and tarsi ochreous, the outer face of the tibiae lemon-yellow, the apical fourth of all the femora ochreous inwardly, lemon-yellow outwardly, the rest of the femora, the coxae and trochanters black. The clypeus and lower half of the face with a dense silvery pubescence. The upper half of the face, the vertex, temples and the whole thorax, except the neck of the pronotum, clothed with a conspicuous golden or brassy-silvery pubescence, longer and denser on the pronotum and metanotum than elsewhere. Legs and abdomen with a fine silvery pubescence, forming on the latter fairly distinct transverse apical fasciae which are widened laterally. The whole body dull, microscopically punctured. Eyes greenish, slightly convergent towards the vertex, the distance between them there being equal to the combined lengths of the first four joints of the flagellum. Clypeus feebly carinate in the middle, its anterior margin arcuate, with a slight angular notch on each side at about the outer fourth. Pronotum shorter than in *oraniensis*, the anterior face steeper. Declivity of epinotum less oblique than in *oraniensis*. Pygidial area narrower than in that species, shining, with a few elongate punctures, marginate at the sides. Recurrent veins coalescing at their junction with the cubitus, almost forming a short stalk.

♂, 4.6 mm. long. Flagellum pale brown below, tarsi pale ochreous, fourth to sixth abdominal segments black above, brownish red below, their apical margins flavescent, third dorsal segment brownish red on the basal half. Tibiae and apices of the femora of a paler yellow than in the ♀, otherwise like that sex in colour, pubescence and sculpture.

Flagellum stout, none of the joints except the last more than one-fifth longer than wide, the second as long as wide and hardly longer than the first (in the ♀ the second is twice as long as wide at the base). The eyes are barely convergent above, further apart than in the ♀, the distance between them on the vertex being equal to the combined lengths of the scape and first five joints of the flagellum. The middle of the anterior margin of the clypeus obtusely angular, not notched at the sides.

Willowmore, C.P. Type in coll. Brauns.

G. karrooensis Brauns. *Verh. Zool. Bot. Ges. Wien.* LVI, 52, ♀. 1906.

♀, 6.5 mm. long. Black, mandibles flavous except at the apex, the flagellum brown underneath, tarsi and tegulae brown, hind tibiae outwardly pale straw-yellow. Clypeus and lower half of face silvery pubescent, upper part of face

as far as the anterior ocellus with greyish silvery pubescence. The rest of the body dull, the head and thorax very finely and closely punctured, the abdomen rugulose above, clothed with a dense, and very fine, greyish silver pubescence which forms on the abdominal segments transverse apical fasciae. Pygidial area bare, shining, elongate triangular, sparsely punctured, marginate at the sides. Ventral surface of abdomen shining and glabrous. Anterior margin of clypeus arcuate and entire. Eyes convergent towards the clypeus, the distance between them on the vertex being equal to one and one-third of the length of the scape. First joint of flagellum one and a half times longer than wide at the apex, the second joint one-third longer than the first, the third joint one and three-quarter times longer than the first. Pronotum nearly as long as the mesonotum, the dorsal face shorter than the anterior, not much depressed below the mesonotum. The recurrent veins coalesce just below their junction with the cubitus. The first abscissa of the radius twice as long as the second.

Willowmore, C.P. Type in coll. Brauns.

G. capensis Brauns (Fig. 12). *Verh. Zool. Bot. Ges. Wien.* LVI, 49, ♀, ♂. 1906.

♀, 7.5 mm. long. Head and thorax black, mandibles flavous, their apices black. Scapes in front flavous, tegulae, apices of all the femora, the tibiae and tarsi reddish ochreous, the tarsi a little paler; abdomen red (pale burnt sienna). Clypeus and lower half of face densely silvery pubescent, the upper half of the face and the vertex with long and pale golden pubescence; thorax with similar pubescence, exerted and fairly long and dense at the sides, shorter above. Abdomen and legs with a fine, adpressed and pale yellowish pubescence which is slightly denser on the apical third of the first three segments, forming barely perceptible transverse fasciae. Head and thorax dull, the sculpture in greater part hidden by the pubescence; the puncturation is finest on the head; the epinotum is very closely and finely punctured and the scutellum less closely than the mesonotum. Abdomen dull, microscopically punctured. Pygidial area elongate triangular, marginate at the sides, covered with elongate punctures and a few reddish yellow setae. Anterior margin of clypeus convex. Eyes moderately convergent above, the interocular distance on the vertex being equal to the combined lengths of the first four joints of the flagellum. First joint of flagellum as long as wide, the remainder all longer than wide, the second joint two-thirds longer than the first. Dorsal face of the pronotum almost linear. Declivity of epinotum subvertical, its junction with the dorsum obtusely angular. Tibiae and tarsi spinose, the spines pale yellow. Comb of anterior tarsus fairly long and thin. In the front wing the two transverse cubitals, and the two recurrent veins coalesce at the junction with the radius and cubitus respectively. The first abscissa of the radius about one-third longer than the second, the accessory cell quite as long as the radial. The recurrent veins meet the second cubital cell at its proximal third.

♂, 6.3 mm. long. Colour and sculpture as in the ♀, the pubescence similar but distinctly shorter and less abundant. Abdomen more elongate. Eyes less convergent above, the distance between them on the vertex being equal to the length of the first four and half the fifth joints of the flagellum combined. Pygidial area marginate, produced at the apex into a semicircular, porrect and translucent lamella. Otherwise like the ♀.

Willowmore, C.P. November. Type in coll. Brauns (R.M.).

G. lanuginosus n.sp. (Fig. 5).

This species appears to be very closely allied to *G. Waltii* Spin. of the Mediterranean region, but differs from the latter (known to me only from the description) by the greater interocular distance, and by the much coarser puncturation of the head and thorax.

♂, 7.5–9 mm. long. Black, mandibles pale flavous, their apices piceous, the apices of the scapes in front more or less flavous, tegulae ochreous, all the tarsi and the bases of all the tibiae and apices of all the femora pale reddish brown, the tibiae dark brown. Veins of wings reddish ochreous; eyes blackish green; all the abdominal segments with the apical margins testaceous, the apical segment dark brown. Face and clypeus clothed with a long, decumbent and silvery pubescence; vertex, temples, the whole thorax, the coxae and femora outwardly with a long, exserted, somewhat woolly, whitish pilosity, abundant but not hiding the sculpture, least dense on the dorsal surface and on the sides of the epinotum. Abdomen with decumbent greyish pubescence, longer and forming transverse fasciae on the apical margins; on each of the third and fourth ventral plates there is a transverse median fovea densely clothed with a decumbent golden pubescence. Tibiae with fine greyish pubescence.

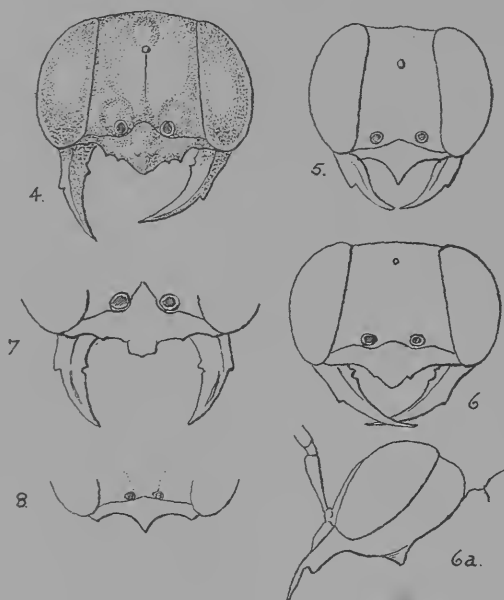


Fig. 4. *Gastrosericus Turneri*, ♀.
Fig. 5. *G. lanuginosus*, ♂.
Fig. 6. *G. Braunsi*, ♀.

Fig. 6 a. *G. Braunsi*, side view.
Fig. 7. *G. Neavei*, ♀, clypeus.
Fig. 8. *G. Neavei*, ♂, clypeus.

Clypeus dull and very finely rugulose, except the anterior margin of the median area which is produced into an acute triangular tooth, nearly as long as its basal width (the sculpture and tooth hidden by the dense pubescence). Face dull, closely coriaceous and punctate. Vertex behind the ocelli dull, sparsely and coarsely punctured. Pronotum, mesonotum, scutellum and the sides of the thorax and epinotum closely punctured, dull, the punctures larger and further apart on the mesonotum and scutellum than elsewhere, the spaces between the punctures slightly shining; the dorsum of the epinotum dull, closely reticulate-punctate. Abdomen microscopically punctured, almost dull; pygidial area marginate at the sides, clothed with a few long yellow hairs, broadly truncate apically, the last ventral plate projecting outwards as a semi-circular lamella. Eyes only slightly convergent above, the distance between them on the vertex being almost equal to the combined lengths of the first five joints of the flagellum. Joints of flagellum short, none more than one and a half

times longer than wide, the second, third and fourth subequal, the first two-thirds the length of the second. (In *Waltii* the second is almost twice as long as the first.)

Dorsum of epinotum nearly as long as the mesonotum, fully twice as wide at the base as long in the middle. Abdomen oblongo-ovate. Radial cell short, rectangularly truncate; the first abscissa of the radius equal to the second and third combined, the second is very short, as the transverse cubital veins almost meet on the radius. The recurrent veins enter the second cubital cell close together within the proximal half of the cell. Pterostigma reddish brown, the wings hyaline.

Sawmills, S. Rhodesia. October. Numerous males were found flying over a sandy path in the forest. Type in Rhod. Mus. coll. (T.M.).

G. divergens Brauns, nom. in litt. Brauns.

♀, 5-6.3 mm. long. Black, mandibles flavous, their apices black: tegulae and an indistinct streak on the outer side near the base of the front and hind tibiae, dirty straw-yellow; tarsi brown, the apical margins of the abdominal segments narrowly testaceous.

Clypeus and lower half of the face with a dense silvery pubescence, the rest of the body with a fine and sparse greyish pubescence, which, however, is dense on the apical margins of the abdominal segments, forming there transverse fasciae conspicuous only when the insect is viewed obliquely from in front. Pygidial area smooth, shining, sparsely and strongly punctured, elongate triangular in shape and marginate at the sides, the apex with four short reddish setae. The whole body, except the pygidium, dull; head and thorax very finely and closely punctured, the abdomen rugulose. Anterior margin of clypeus convex, with a slight notch on each side at about the outer fourth, the median area with a low swelling which does not reach the anterior margin. A narrow shining line extends from the clypeus to the anterior ocellus. The scape is almost as long as the first three joints of the flagellum; the third joint of the latter is a little longer than the second, and two-thirds longer than the first. The eyes converge towards the vertex, the interocular distance there being equal to the combined lengths of the first three, or first three and half of the fourth joints of the flagellum. The length of the head behind the eyes is equal to the length of the second joint of the flagellum. Posterior ocelli oblongo-ovate, placed a little in front of the posterior margin of a moderately tumid ocellar area. Dorsal face of the collar of the pronotum thin. The junction of the two faces of the epinotum rounded, the declivity oblique, with a deep and shining fovea in the middle of the upper half. Middle and hind tibiae and tarsi spinose, the spines dull yellow. Anterior tarsi with brown spines, five of which compose the comb. In the forewing the first abscissa of the radius is two and a quarter times longer than the second, and a little longer than the third. The second discoidal cell is stalked, owing to the coalescence of the recurrent veins, the stalk is as long as the second abscissa of the radius. The radial cell is rectangularly truncate.

Sawmills, S.R., nesting in loose sand. February. Bulawayo, nesting in hard clayey soil. Type in coll. Brauns (R.M., T.M.).

Allied to *Silverlocki* Turner, from which it differs by its smaller size, the shorter second joint of the flagellum, the greater width between the eyes on the vertex, the pygidial area and the venation, especially of the radial and second discoidal cells.

G. simplex n.sp.

♀ and ♂, 5 mm. long. Very closely allied to *divergens* Brauns, from which it differs chiefly by its smaller size and in the following characters.

Flagellum dull ochreous beneath, all the tibiae and tarsi, the mandibles, tegulae in front, and the pronotal tubercles, pale ochreous or straw-yellow. Pubescence of thorax and abdomen silvery, not greyish as in *divergens*. Thorax, excepting the epinotum, and the abdomen slightly shining, the scutellum and metanotum distinctly shining. The puncturation is much stronger and less close than in *divergens*. In that species the sculpture of the head and thorax is almost reticulate-punctate, whereas in this species the spaces between the punctures on the head and thorax (the epinotum excepted), are fully as wide as the punctures themselves, and shining. The epinotum is more closely punctured than the rest of the thorax, and has a distinct median carina on the dorsum which reaches to the brow of the declivity. Pygidial area in the ♀ shining, very sparsely and finely punctured at the sides; in the ♂ more coarsely punctured and narrowly emarginate at the apex. Ventral surface of abdomen almost shining and glabrous (pubescent in *divergens*), more coarsely and less closely punctured than in that species. The interocular distance on the vertex in the ♀ is equal to the combined lengths of the first three joints of the flagellum; in the ♂ to that of the first four and half the fifth. In the ♀ the second joint of the flagellum is nearly twice as long as the first (in *divergens* it is only one-third longer). In both sexes the collar of the pronotum is much shorter than in *divergens*, and the apical margins of the abdominal segments are more widely testaceous. Otherwise like that species.

Wittington Estate, Inyanga district, S.R., 3600 ft. One ♀, four ♂♂. On a sandy path. The prey is a small larval cricket (*Tridactylus* sp.) about 8 mm. long. Type in R.M. coll. (T.M.).

At Khami, S.R., several specimens of a slight variety of this species were taken. The ♂♂ are similar, but the ♀ differs from the type of the species in having the second joint of the flagellum a little shorter, or barely half as long again as the first, and in the more strongly punctured pygidium, which is also less acute at the apex.

G. Turneri n.sp. (Fig. 4).

♀, 8 mm. long. Black, mandibles excepting their piceous apices, a broad streak on the outer side of all the tibiae and the extreme apices of the femora, lemon-yellow; tegulae testaceous-ochreous, apical margins of the abdominal segments narrowly fusco-testaceous. Clypeus and excavated area of the face clothed with a dense pale golden pubescence, the rest of the head and dorsum of the thorax with a microscopic and brownish pubescence; sides and sternal surface of the thorax, sides of the epinotum, pronotum and lateral margins of the mesonotum with longer and whitish pubescence, exerted on the epinotum, oblique elsewhere. Abdomen and legs with a pruinose pubescence; on the abdomen this pubescence forms narrow apical fasciae, plainly visible when viewed from behind, and on the rest of each segment it is set in contrary directions so as to produce a chequered pattern. Anterior margin of clypeus shining, the rest of the head and the whole thorax dull, very finely and closely punctured, the punctures a little larger on the mesonotum and scutellum. Abdomen dull above, microscopically punctured, the ventral surface smooth and shining on the third and succeeding segments, the first and second only nitidulous. Pygidial area shining, sparsely but strongly punctured, elongate triangular, the apex narrowly rounded, the sides marginate, the ventral surface punctured.

Mandibles moderately long, acute, furnished with a small angular tooth on the inner margin near the base. Median fourth of clypeus produced and obtusely angular, on each side of the projecting portion the anterior margin carries two small teeth (see Fig. 4). The lower third of the face, between the

antennal sockets and the eyes, is excavated, and the inner margin of the excavation is extended upwards as a raised line parallel to the inner orbits and as far as the level of the anterior ocellus. From the latter to the base of the clypeus is a shining and impressed line. The eyes are only slightly convergent above, the distance between them on the vertex being equal to the length of the first four plus half the fifth joints of the flagellum. The second joint of the latter is half as long again as the first. Temples at their lower fourth armed with a short triangular tooth, plainly visible from the side. Dorsum of epinotum a little shorter than the declivity, about one and a half times longer than the scutellum. Abdomen fairly deeply constricted between the first and second segments, and slightly so between the second and third. Anterior coxae produced into an oblong, quadrate and thick process, directed outwards. Middle and hind tibiae with pale yellow spines, the posterior calcar a little longer than the metatarsus; anterior metatarsus with five stout and long reddish spines. Wings hyaline, the veins brown. Radial cell rectangularly truncate, the first abscissa about equal to the third, nearly three times longer than the second,

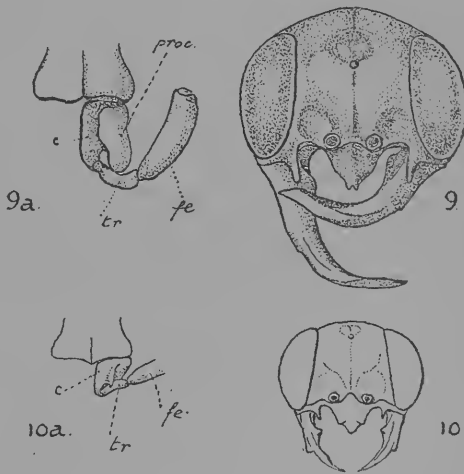


Fig. 9. *G. lamellatus*, ♀.
Fig. 10. *G. bidentatus*, ♂.

Fig. 9 a. Anterior of coxa of same seen from below.
Fig. 10 a. Anterior coxa of same, seen from below.

and the latter is only a little longer than the distance between the two recurrent veins on the cubitus.

Hillside, Bulawayo, one ♀, November; Victoria Falls, one ♀, November. Type in R.M. coll. Although very different in sculpture and colour, this species shows a relationship to *G. Neavei* Turner in the presence of the toothed temples, the slight convergence above of the inner orbits, and the deep constriction between the first and second abdominal segments.

G. lamellatus Turner (Figs. 9, 9 a). *Ann. Mag. N.H.* IX (VIII), 421, ♀, ♂. 1912.

♀, 7–8.5 mm. long. Black, pronotal tubercles, tegulae, the outer side of all the tibiae and the inner face of the posterior tibiae, and the apex of the protuberance of the anterior coxae, pale lemon-yellow. Mandibles flavo-testaceous, their apices reddish; the apical margins of the abdominal segments narrowly brown; the tarsi pale reddish brown.

Clothed all over with a decumbent and brilliant silvery pubescence, which is particularly dense on the face and head behind the eyes, on the pro-mesothorax, sides of epinotum and apical margins of the abdominal segments; on the latter it forms transverse bands plainly visible when viewed from behind.

Head and thorax dull, very closely and finely punctured, the dorsum of the epinotum exceedingly finely coriaceous. Abdomen above, dull and microscopically sculptured, below, shining, sparsely and finely punctured; pygidial area glabrous, moderately shining, sparsely punctured, longer than wide at the base. Mandibles very long, broad at the base, the apical half not gradually narrowed but of equal width almost to the apex, strongly incurved towards the apex which is oblique and fairly acute; the outer margin of the mandible is deeply excised, the inner not dentate, but furnished with a broad angle near the base. Clypeus in the form of a porrect, subhorizontal lamella, convex transversely, narrowed towards the apex which is deeply emarginate, the angles of the emargination forming a tooth on each side. The anterior margin of the head on each side of the lamella is deeply and arcuately excised as far as the base of the antennae and produced into a long, stout spine which is obliquely truncate and projects over the base of the mandibles. Eyes large, moderately convergent above, the distance between them on the vertex being equal to the combined length of the first four and half the fifth joints of the flagellum; second joint of the latter half as long again as the third. A sharply impressed median line extends from the base of the clypeus to the anterior ocellus, and another from the middle of the ocellar area to the back of the head. The temples are a little more than half as broad as the eyes. Anterior coxae produced beneath into a thick process which is widest at the base, somewhat compressed in the apical half and truncate at the apex; the process is longer than wide at its base and longer than the trochanter. Anterior edge of the collar of the pronotum sharply marginate. Dorsum of epinotum with a median longitudinal carina which does not reach the apex. Anterior metatarsus with a comb composed of five thin spines. First abscissa of radius about one-third shorter than the third, and about one and a half times longer than the second; the recurrent veins meet just before their junction with the cubitus. Wings hyaline, the veins brown.

♂, 7 mm. long. Like the ♀ but the temples are not so broad. The interocular distance on the vertex is equal to the length of the first four joints of the flagellum.

Sawmills, S.R., Nov. to April, nesting in the sandbanks of the Umgusa River (R.M., T.M.).

G. bidentatus n.sp. (Figs. 10, 10 a).

♂, 5.5 mm. long. Head and thorax black, abdomen dark brown, the apical margins widely flavo-testaceous, the mandibles and last three joints of all the tarsi pale ochreous, the first two joints pale brown; the pronotal tubercles, the tooth on the anterior coxa, the tegulae and upper surface of all the tibiae, lemon-yellow; femora brownish black. Sculpture and pubescence like that of *lamellatus*, but the pubescence is less abundant.

Mandibles acute at the apex, gradually acuminate, not broad and subulate at the apex as in *lamellatus*, and when closed their apices do not extend beyond the bases of the opposed mandible as in *lamellatus*. The median area of the clypeus is produced into an oblique and subtriangular lobe, the apex of which is declivous. On each side of the median area the clypeus is deeply excised and the outer corner of the excision is produced into a thin tooth or spine, pointing forwards, as in *lamellatus*. The interocular distance on the vertex is equal to the length of the first four joints of the flagellum. The lower surface of the anterior coxae is furnished with a low crest ending posteriorly in a small yellow tooth. Dorsum of epinotum relatively longer, and the brow of the declivity less angular than in *lamellatus*. Otherwise like the ♂ of that species.

Sawmills, S.R., one ♂, December. Type in R.M. coll.

G. Silverlocki Turner. *Ann. Mag. N.H.* IX (VIII), 422, ♀. 1912.

♀, 8 mm. long. Colour, sculpture and pubescence like that of *lamellatus*, but the pubescence is a little less brilliant and less dense, the lemon-yellow streak on the anterior tibiae narrower, and the last three joints of all the tarsi ferruginous. The dorsum of the epinotum is less finely sculptured, almost rugulose in the middle. Pygidial area very shining, impunctate, elongate triangular, twice as long as wide at the base, narrower than in *lamellatus*.

Mandibles long, very slender and gradually narrowed to the sharp apex, falciform, excised on the outer margin, the inner margin without teeth. Anterior margin of clypeus convex. Second joint of flagellum half as long again as the third, twice as long as the first. Eyes strongly convergent above, the distance between them on the vertex equal to the length of the second joint of the flagellum. The temples are narrower than the eyes. An impressed median longitudinal line extends from the clypeus to the anterior ocellus, thence over the ocellar area to the back of the head. Dorsal face of pronotal collar rounded and curving gradually downwards in front, not marginate and horizontal as in *lamellatus*. Anterior coxae simple. Dorsum of epinotum longer than in *lamellatus*. Wings hyaline, slightly tinged with ochreous, the veins brownish yellow. The venation is similar to that of *lamellatus*. Comb of anterior metatarsus composed of five long, thin and brown spines.

Pakasa, N. Rhodesia (Silverlock); Upper Luangwa River, Niamadzi River, N.R. (Neave); Sawmills, S.R., nesting in the same situations as *lamellatus* (R.M., T.M.).

G. Swalei Turner. *Ann. Mag. N.H.* XVII (VIII), 258, ♀. 1916.

“♀. Nigra, pallide aureo-pilosa; tegulis macula basali, femoribus apice tibiisque extus flavis; tegulis apice testaceis; tarsis fuscis; mandibulis fusco-ferrugineis; alis hyalinis; venis fuscis; prosterno utrinque acute cornuto. Long. 7 mm.”

“♀. Eyes moderately convergent towards the vertex, separated on the vertex by a distance equal to about twice the length of the scape; front very broad, clypeus and lower part of the face covered with short silver pubescence. Eyes separated from the posterior margin of the head by a distance equal to about half the length of the scape. Prosternum produced on each side into a stout, acute, curved horn, plainly visible from above. Median segment (epinotum) shorter than the mesonotum, strongly narrowed to the apex. The whole insect opaque, with pale golden pubescence thinly distributed, becoming denser on the pronotum, median segment, and behind the eyes, and forming apical bands on the dorsal segments of the abdomen. Pygidial area triangular, punctured and bare. Second abscissa of the radius very short; the two recurrent nervures meeting before joining the cubitus.

Hab. Lonely Mine, S. Rhodesia (H. Swale), January.

Easily distinguished by the extraordinary horns of the prosternum; otherwise it superficially resembles the West African *G. attenuatus* Turner, but has the median segment shorter and the eyes much farther apart on the vertex, in the latter feature resembling *G. lamellatus* Turner and forming a link between the usual strongly convergent eyes of *Gastrosericus* and the parallel eyes of *Parallelopsis*.”

This species is unknown to me in nature. The type is in the British Museum coll.

G. attenuatus Turner. *Ann. Mag. N.H.* IX (VIII), 423, ♀. 1912.

“♀. Nigra, argenteo-pilosa; mandibulis (apice excepto) tibiis subtus tarsis segmentisque dorsalibus apice testaceo-brunneis; tibiis supra tegulisque flavis;

callis humeralibus flavo-marginatis; alis, hyalinis, subiridescentibus, venis fusco-ferrugineis; clypeo apice subtruncato vel subemarginato. Long. 7 mm."

"♀. Very near *G. Silverlocki* described above, but differs in the clypeus, which is subtruncate and very shallowly emarginate at the apex; in the slenderer form; the median segment is three times as wide at the base as at the apex, only twice as wide in *Silverlocki*, the first abscissa of the radius is three times as long as the second, and the eyes are a little more widely separated on the vertex, though much nearer in this character to *Silverlocki* than to *lamellatus* and *capensis*. The median segment shows indistinct transverse striae near the middle.

Hab. Volta River, Gold Coast (G. C. Dudgeon)."

Type in the British Museum coll.

G. Braunsi n.sp. (Figs. 6, 6 a).

♀, 7.3–8 mm. Black, mandibles pale yellow, the apices black, upper third of the scape in front dirty yellow. Tibiae and front and middle tarsi pale ferruginous, the posterior tarsi brown, all the tarsi with a streak of lemon-yellow on the outer side. Apical third of the anterior and middle femora, and extreme apex of hind femora, ferruginous; anterior margin of clypeus, tegulae and posterior margin of pronotal tubercles, flavous. First two segments of abdomen ferruginous, the apical margins of all the segments except the last, widely flavo-testaceous. Pygidial area piceous, shining, sparsely but strongly punctured, triangular, subacute at the apex, sharply marginate at the sides, a little longer than wide at the base.

Dull, microscopically punctured or coriaceous. Face and temples covered with a fine silvery pubescence. Vertex and thorax with a very fine, but not dense, pubescence, of a silvery or slightly brassy tinge. Legs and abdomen with thin silvery pubescence, forming the usual transverse bands on the apical margins of the abdomen. Mandibles acuminate, the inner margin with a small tooth near the base. Median area of clypeus triangularly produced, the apex rounded, feebly carinate longitudinally in the middle. Eyes feebly convergent above, the interocular distance on the vertex being equal to the length of the first four joints of the flagellum, and hardly less than two-thirds of the distance between them across the clypeus. Second joint of flagellum about twice as long as the first, and as long as the third. Temples narrower than the eyes, produced below into a triangular lamelliform tooth, wider at its base than long. Anterior coxae with a subconical tubercle in front, which is blunt at the apex, directed forwards, and shorter than the trochanter. Dorsal face of pronotal collar short, merging by a curve into the declivous anterior face. Dorsum of epinotum not carinate, merging gradually into the declivity, which has a median longitudinal groove. Abdomen fairly distinctly constricted between the first three segments. Wings hyaline, tinged with yellow, the veins brown. First abscissa of radius fully as long as the third, about two and a half times as long as the second. The recurrent veins meet just before their junction with the cubitus, in some specimens a little sooner, so as to form a single veinlet which makes the second discoidal cell petiolate.

♂, 5.5 mm. long. Scares in front pale yellow, apical segment of abdomen reddish, sparsely pilose and finely punctured. Upper half of face with golden pubescence, the pubescence on the thorax longer than in the ♀, otherwise like that sex in colour, sculpture and pubescence. Inner orbits of the eyes parallel, the distance between them on the vertex equal to about the combined lengths of the first six joints of the flagellum. The tooth on the temples is very small, hardly perceptible. The anterior coxae simple and flat. Otherwise like the ♀.

Sawmills, S.R. and Victoria Falls, November to February, nesting in sandy, grassy soil. Type in R.M. coll. (T.M.).

G. Neavei Turner (Figs. 7, 8). *Trans. Ent. Soc. London*, p. 754, ♀. 1913.
Parallelopsis africanus Maidl (=♂). *Boll. Lab. Zool. Portici*, ix, 147. 1914.

♀, 7.5–9 mm. long. Black, a longitudinal streak of pale lemon-yellow on the posterior tibiae, the last joint of the tarsi ferruginous, apical two-thirds or more of the wings dark fuscous and slightly violaceous, the veins black.

Head and thorax dull, the abdomen slightly shining above. Head and thorax very coarsely and closely punctured, less closely on the mesonotum than on the head, the sides of the epinotum more finely and more distantly punctured, the middle of its dorsum more or less transversely rugulose as well as punctured. Abdomen finely and closely punctured above, shining and very delicately punctured below. Pygidial area triangular, narrowly rounded at the apex, sharply marginate at the sides, punctured evenly with large, elongate punctures from which arise golden or silvery golden setae. Clypeus and lower half of face with a pale silvery, long, thin and decumbent pubescence, the rest of the head and thorax with a thin, whitish and exerted pilosity, longest and most abundant on the sides and declivity of the epinotum. Abdomen and legs with thin, greyish and adpressed pubescence, not forming distinct bands on the abdomen.

Mandibles short and thick, acute at the apex, deeply excised on the outer margin and with a small tooth on the inner margin near the base. Clypeus produced in front into a short, subrectangular lobe, and on each side of same, half way between it and the cheeks, into a small tooth (see Fig. 7). Inner orbits parallel, or even slightly divergent above, the distance between them on the vertex being equal to the length of the first six joints of the flagellum combined. The second joint of the flagellum is almost twice as long as the first, and as long as the third. Anterior ocellus somewhat flattened and, like the posterior ocelli, indistinctly defined; a median impressed line extends from the posterior margin of the ocellar area to the occipital margin. Temples about half as wide as the eyes, armed below with a short and obtuse tooth. Declivity of epinotum oblique, its brow rounded, longitudinally sulcate in the middle. First abdominal segment as long as wide at the apex, about two and a half times wider there than at the base, or subpetiolate, the second segment slightly constricted at the base.

The second discoidal cell stalked, owing to the recurrent veins coalescing before meeting the cubitus. The stalk is about as long as the second abscissa of the radius. The first abscissa is as long as the third and two and a half times longer than the second. The spines on the legs are pale yellowish-white, the anterior metatarsus armed with six short and acute spines. The last tarsal joint is somewhat swollen, the pulvilli large.

♂, 6–7 mm. long. Temples unarmed. Clypeus produced in the middle into a triangular and acute tooth, the margins on each side of same concave. Otherwise like the ♀.

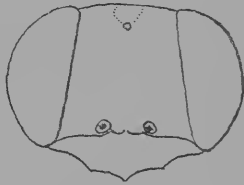
This ♂ agrees with the description of *africanus* Maidl. As it was taken at the same time and place as several females, I have no doubt that it is the ♂ of *Neavei* Turner. The absence or reduction of the tooth on the temples would appear to be characteristic of the ♂ sex in this genus, cf. *Braunsi*, ♂.

At my request Mr Turner re-examined the type of his species and confirmed the existence of certain inaccuracies in his description. The clypeus is formed as I have described it, and is not "broadly rounded at the apex"; moreover, the dorsum of the epinotum is rugulose only in the middle.

British East Africa (Neave); Bulawayo, Sawmills and Victoria Falls, S.R., flying about amongst grass and low vegetation, probably in search of small Orthoptera (R.M., T.M.).

G. modestus n.sp. (Figs. 11, 11 a).

♀, 5.5 mm. long. Head and thorax black, mandibles pale ochreous, ferruginous at the apex. Lobe of the median area of clypeus ferruginous. Pronotal tubercles and tegulae reddish yellow. Tibiae and tarsi pale ferruginous, a longitudinal streak of lemon-yellow on the outer sides of all the tibiae. Coxae and trochanters piceous, the femora fusco-ferruginous, becoming paler outwardly and towards the apex which is pale yellow. Scapes brown, ochreous at the apex. First abdominal segment ferruginous, with a small and indistinctly defined cloud of brown on each side; the second and following segments blackish or dark brown, margined with ferruginous, the latter colour merging gradually into the flavo-testaceous apical margins. Pygidial area castaneous, glabrous, shining, coarsely and sparsely punctured, marginate at the sides, half as long again as wide at the base, the apex subacute.



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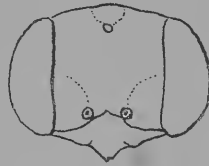
11



12



14.



11a.

Fig. 11. *G. modestus*, wing.

Fig. 12. *G. capensis*, wing.

Fig. 14. *G. laticeps*.

Fig. 11 a. *G. modestus*, head.

Fig. 13. *G. chalcithorax*.

Dull, closely, finely and rather unevenly punctured all over, the epinotum evenly and more strongly punctured than the rest. Pubescence on the lower half of the face dense and silvery, on the rest of the head and on the thorax less dense, somewhat coarser and of a brassy silvery tint. Pubescence on the abdomen less fine, greyish silvery, forming very indistinct apical bands. Median area of clypeus produced in the middle into a short lobe which is rectangular at each corner and feebly tuberculate in the middle. Inner orbits of the eyes parallel, the interocular distance on the vertex being equal to the length of the scape plus the length of the first four joints of the flagellum. The second joint of the latter is hardly longer than the third, about three-quarters longer than the first, all the joints fairly short and thick.

Dorsal face of pronotal collar convex from front to back. Mesonotum broad; dorsum of epinotum short, nearly three times wider at the base than

long in the middle, oblique and merging gently into the declivity, and with a fine median carina which reaches the brow of the declivity. Abdomen not constricted between the segments. Wings hyaline, with an apical pale fuscous border, the veins brown. The recurrent veins coalesce before entering the cubitus, the stalk to the second discoidal cell so formed being as long as the second abscissa of the radius. The first abscissa is quite two and a half times as long as the second, and not much shorter than the third. Anterior metatarsi with five short, whitish spines.

Sawmills, S.R. December. Type in R.M. coll.

G. laticeps n.sp. (Fig. 14).

♂, 6.3 mm. long. Head and thorax black, the mandibles excepting the ferruginous apices, clypeus, front and middle tibiae and tarsi, posterior tibiae externally, tegulae and posterior margin of pronotal tubercles, pale lemon-yellow. The anterior and middle tibiae with a streak of pale red on the anterior face. Coxae, trochanters and femora black, the apices of all the latter pale yellow; tarsi fusco-ferruginous. Scapes lemon-yellow, with a black patch on the basal half of their inner sides. First and second segments of abdomen ferruginous, the third brownish black, its apical margin ferruginous, the fourth and fifth black with the apical margins narrowly flavous, the sixth black at the base, its apical half yellow; the seventh yellow; the second to seventh sternites brown, with flavo-testaceous margins.

Lower half of face and base of the mandibles with silvery pubescence, the rest of the head and the thorax with a brilliant brassy-golden pubescence; the pubescence on the abdomen of the same colour but less abundant, except on the apical margins where it forms transverse bands. Dull, closely and microscopically punctured, the epinotum more coarsely punctured, the abdomen microscopically rugulose.

Anterior margin of median area of clypeus obtusely angular, ending in a short and acute tooth in the middle. Eyes subparallel, slightly divergent above and below, the interocular distance on the vertex equal to the length of the scape and first three joints of the flagellum combined. The first joint of the flagellum two-thirds as long as the second, the third joint about one-third longer than the second, all the joints thick and not very much longer than wide, the third and fourth slightly concave above. Temples two-thirds as wide as the eyes. Head broad, two-thirds wider than the mesonotum across the tegulae. Dorsal face of pronotal collar with obtusely angular shoulders; dorsum of epinotum not carinate in the middle, longer than in *modestus*, being about half as long as wide at the base. Abdomen somewhat elongate, three times longer than wide, fairly clearly constricted between the first and second segments; the pygidial area punctured, widely rounded at the apex. Wings and venation as in *modestus*. Spines on the legs whitish yellow, the anterior metatarsus with three short spines.

Victorial Falls, S.R. Type in R.M. coll.

This species might be the ♂ of *modestus*, in spite of the different form of the clypeus, since such difference also occurs in *Neavei* and *chalcithorax*. However, the differences in the shape of the epinotum, the puncturation and colour incline me to keep it separate.

PROSOPIGASTRA A. Costa

Ann. Mus. Zool. Napoli, iv, 88. 1868.

CHARACTERS. Head wider than the thorax. Inner margins of the eyes convergent above, more so in the male than in the female. Anterior ocellus convex and normal, posterior ocelli flat, elongate and indistinct, the ocellar

area round and tumid. Between the anterior ocellus and the antennal sockets is a more or less round, shining and convex swelling or tubercle. Mandibles excised on the outer margin, the inner margin with a tooth near the base. Pronotum deeply depressed below the level of the mesonotum, its collar very short. Epinotum short, with a marginate dorsal field. First tergite with a longitudinal edge or carina on each side below (where it folds over on the ventral surface). Pygidial area fairly distinct, glabrous.

Front wing: radial cell appendiculate; three cubital cells present, the first larger than the other two, the second narrower on the radius than on the cubitus and receiving both recurrent veins; the basal vein originates some distance beyond the end of the submedial cell. Hind wing: the cubitus arises beyond the submedial cell.

Legs weak; tarsal comb composed of long, thin and flexible cilia. Middle tibiae with one spur. Claws small, unarmed. Body coarsely punctured.

Hab. Palaearctic and Ethiopian regions.

These insects make shallow and oblique burrows, which end in three to six small chambers, provisioned with immature Pentatomid bugs.

KEY TO THE SPECIES OF *PROSOPIGASTRA*

- (4) 1. ♂♂. Eyes very close together on the vertex; first abdominal segment with a dense band of silvery pubescence above near the base; mesopleurae armed with two or three spines or tubercles.
- (3) 2. Abdomen black and dull, very closely punctured, except the depressed apical margins which are shining, more coarsely and sparsely punctured.
Mocsaryi Brauns
- (2) 3. Abdomen moderately shining, the first two segments red, much less closely punctured, the apical margins hardly differentiated by less close puncturation.
carinata Arnold
- (1) 4. ♂♂, a considerable space between the eyes on the vertex.
- (6) 5. Abdomen black in both sexes, the apical margins of the segments more or less testaceous. ♂♂, lower margin of mesopleurae produced into a blunt tooth in front, and an acute and downwardly directed one behind; ♀, abdomen strongly punctured.
capensis Brauns
- (5) 6. ♂♂. Mesopleurae very feebly bidentate; the abdomen black with the apical margins of the segments testaceous. ♀♀, at least the first three abdominal segments red, the first with a basal black patch on each side; shining and much more finely punctured.
Neavei Turner

P. Mocsaryi Brauns (Figs. 16, 16 a).

♂, 6 mm. long. Black, mandibles except at the tips, tibiae, tarsi, apices of the femora and the tegulae, ochreous; ventral surface of the abdomen and the apical margins of its dorsal segments, piceous; upper half or more of the eyes bice-green. Wings tinged with ochreous.

Face, excepting the median tubercle and ocellar area, covered with a long, and rather sparse, silvery pubescence. Thorax with whitish pilosity, scanty except at the sides. Abdomen microscopically pubescent, the first segment with a band of long, decumbent and silvery pubescence around the margin of the vertical basal face; seen from in front, this band is plainly apparent. Legs with a fine white pubescence. Clypeus and face, excepting the shining and sparsely punctured median tubercle and ocellar area, fairly closely and finely punctured, the clypeus more coarsely than the face. The temples very shining and almost impunctate. Pro-, meso- and metathorax shining and sparsely punctured. Dorsum of epinotum with a distinctly defined and marginate field, shining, striato-rugose and with a median longitudinal carina which does not reach the posterior margin; the declivity and dorsum outside

the dorsal field finely punctate, the sides rugulose. Abdomen above dull, very closely, evenly and finely punctured, the impressed apical margins shining, sparingly and coarsely punctured. The ventral surface is only moderately shining, finely and loosely punctured. The first segment is vertically truncate at the base, the vertical face slightly concave, shining and longitudinally impressed in the middle. Fourth and fifth ventral segments with a low transverse carina across the middle.

Anterior margin of the median area of the clypeus concave, ending on each side in a dentiform angle. (What appears to be a subrectangular lobe in the centre is, I believe, the labrum, very closely applied or even fused to the clypeus.) Eyes almost touching each other on the vertex, the distance between them being less than half the length of the first joint of the flagellum. Anterior coxae at the base produced into a foliaceous triangular lobe, parallel with the ventral surface of the thorax and directed backwards. Seen from the side, these expansions appear as backwardly directed and slightly curved teeth.

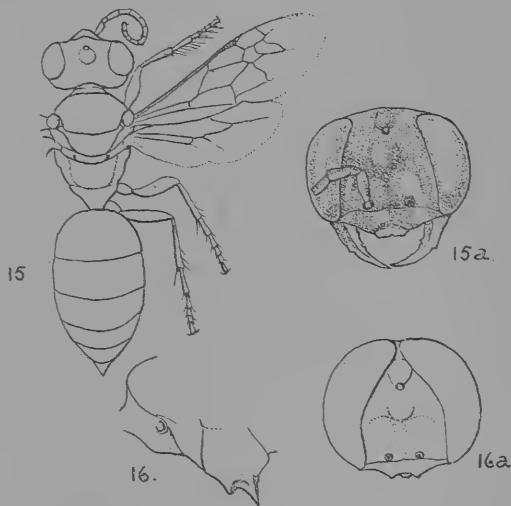


Fig. 15. *Prosopigastra Neavei*, ♀.

Fig. 16. *P. Mocsaryi*, ♂, head.

Fig. 16 a. Lateral view of mesopleura of *Mocsaryi*.

Fig. 15 a. Head of same.

The mesopleurae on their lower half bear three teeth pointing downwards, the anterior two shorter and less acute than the posterior; the inner tooth of the anterior pair is longer than the outer, and the latter is not easily visible except when looked at from below. Dorsum of epinotum fairly long, as long as the scutellum and metanotum combined; its dorsal field is one and a half times wider at the base than long. Wings hyaline, veins and pterostigma yellowish brown; first and second abscissae of the radius subequal, very little shorter than the third; the fourth very short, and in some specimens obsolete, owing to the third transverse cubital vein being interstitial with the truncating vein of the radius.

Willowmore, C.P. January. Type in coll. Brauns (R.M.).

P. carinata n.sp. (Figs. 18, 18 a).

♂, 6-7.5 mm. long. Head and thorax black, the first two and the last segments of the abdomen dark ferruginous, the third to sixth segments piceous with their apical margins rufo-testaceous. Mandibles, excepting their black

apices, the tips of the mesopleural spines and all the tibiae and tarsi, ferruginous; the tibiae with a pale cream-yellow spot outwardly at the base, the femora black, the apical fifth of the posterior pair ferruginous above. Face and clypeus nitidulous, finely punctured, the median tubercle and the ocellar area shining, the former almost impunctate, the latter sparsely and coarsely punctured. Temples and occiput shining, finely and sparsely punctured. Mesonotum, scutellum, metanotum and mesopleurae shining, coarsely and distantly punctured, the mesosterna shining and very finely, sparsely punctured. Dorsum of epinotum rugose, the rugae curving outwards posteriorly on each side from the median longitudinal carinula, the sides of the epinotum obliquely, the declivity transversely rugoso-striate. The abdomen moderately shining, finely and fairly closely punctured, less closely on the apical margins. Femora shining and sparsely punctured. Face and clypeus covered with a somewhat coarse, outstanding, silvery and not very dense pubescence; the median tubercle, ocellar area, vertex and temples glabrous. Thorax with a fairly sparse, exserted, whitish or silvery pilosity, which however, is absent on the dorsum of the epinotum and on the mesosternum. Abdomen above with a very fine, decumbent and pale golden silvery pubescence, denser on the first segment above the basal declivity, and on the base of the second segment. Legs and mandibles with sparse exserted pilosity.

Anterior margin of the median area of the clypeus concave, with a median and obtusely bidentate lobe in the middle, the lateral angles fairly acute. Eyes strongly convergent above, but behind the ocellar area slightly divergent, the interocular space immediately behind the ocellar area on the vertex being equal to the length of the first joint of the flagellum, and near the occipital margin equal to the second joint. The latter is barely longer than the third, and about a quarter longer than the first. Anterior coxae produced posteriorly into short acute spines. Mesopleurae produced below into two strong spines, the anterior one longer and blunt, and bearing a short tooth near its base (not easily seen except from in front or from behind). The spines in the larger examples are much larger than in *capensis* Brauns, but they are subject to some variation, and usually in the smaller specimens (6 mm.) are much reduced. Dorsum of epinotum as long as the scutellum and metanotum together, the declivity vertical. Fourth sternite with a strong and prominent transverse carina near the base, not reaching the lateral margins of the segment; the fifth sternite with a similar but lower carina. Seventh tergite feebly emarginate at the apex, the lateral angles bluntly produced. Wings hyaline, veins brown; the radial cell abruptly truncate; the first and third abscissae of the radius subequal and each a little longer than the second, the fourth abscissa only half as long as the third.

Sawmills, S.R. Lonely Mine and Victoria Falls, S.R. Type in R.M. coll.

A distinct species, but allied to *Mocsaryi* Brauns.

P. Neavei Turner (Figs. 15, 15 a). *Ann. Mag. N.H.* xix (viii), 325, ♀ (nec ♂). 1917.

♀, 6.2–6.6 mm. long. Black, first three and basal fourth of the fourth abdominal segment ferruginous, the remaining segments piceous, but occasionally the red colour extends over the first five segments, more rarely also on the sixth. Upper part of the eyes blackish green in life, shading to black below. Wings faintly tinged with yellow. Tarsi dark brown. Mandibles ferruginous with the base and apex black. Side of clypeus and of face below the median tubercle densely pubescent, the pubescence slightly exserted and silvery grey. Thorax with a thin, exserted and grey pubescence. Legs and

abdomen with a very fine and silvery grey pubescence, sparse except on the sides of the apical margins of the segments.

Head very shining, the clypeus sparsely and coarsely punctured, the median tubercle and sides of face up to the level of the anterior ocellus very smooth and almost impunctate; the face between the antennal sockets closely and finely, the vertex deeply and loosely punctured. Thorax shining, the prothorax and metanotum finely, the mesothorax coarsely and sparingly punctured, the punctures larger than those on the vertex. Epinotum with a distinctly defined dorsal field which is reticulate-rugose and twice as wide as long; the sides of the epinotum widely striato-rugose, the declivity closely and finely rugose and somewhat dull. Abdomen finely and closely punctured, moderately shining, the punctures becoming increasingly smaller towards the apex of the abdomen. Pygidial area triangular, shining, very sparingly and finely punctured, not marginate laterally. Legs shining.

Clypeus arcuately deflexed towards the apex, the anterior margin feebly

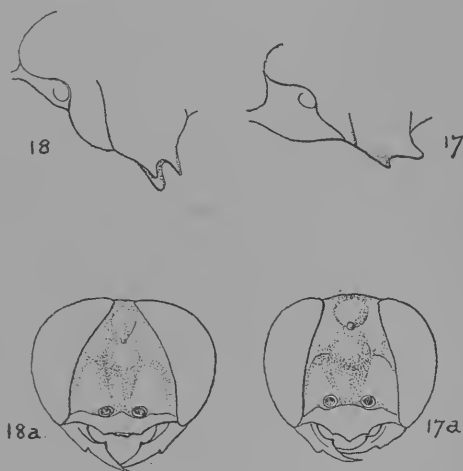


Fig. 17. *Prosopigastra capensis*, ♂, lateral view of mesopleura.

Fig. 17 a. Head of same.

Fig. 18. *P. carinata*, ♂, lateral view of mesopleura.

Fig. 18 a. Head of same.

excised in the middle and angularly notched on each side. The eyes are only slightly convergent above, separated on the vertex by a distance equal to a little less than three times the length of the second joint of the flagellum. The second and third joints of the flagellum of equal length. The median swelling above the antennae is large and plainly protruding when the head is viewed from above.

Junction of declivity and dorsum of epinotum almost rectangular. Middle and hind tibiae and tarsi spinose, the spines yellowish. Anterior tarsi with a comb composed of long, black and thin cilia. In the front wing the first abscissa of the radius is equal to the third, slightly longer than the second, which is a little longer than the fourth.

♂, 5.5–6.2 mm. long. Black, hind tarsi dark brown, tegulae testaceous, apical margins of all the abdominal segments narrowly rufo-testaceous. Sculpture and pubescence as in the ♀, but the puncturation is somewhat closer on the mesonotum, and the face is more densely pubescent and more extensively so, extending as far as the middle of the ocellar area; the latter more

distinct than in the ♀. The distance between the eyes on the vertex is equal to the length of the first three joints of the flagellum, or even to the first three plus half the fourth. Seventh dorsal segment rounded at the apex, the apical sternite widely emarginate and with the lateral angles produced into short teeth. Wings hyaline.

Nyasaland and N.E. Rhodesia (Neave); Bulawayo and Salisbury, S.R.; June and July. Nesting in hard clayey soil. The burrow is oblique, about three inches long and an inch or so below the surface at its end, where it branches into several chambers, in each of which are stored about half a dozen immature Pentatomid bugs. The egg is laid at the base of the abdomen of the bug.

Specimens of Rhodesian origin were identified by Mr Turner as belonging to this species. The male described by him was incorrectly assigned to this species. It should also be noted that his description of the ♀, in regard to the width between the eyes, is also incorrect, the width being barely three times the length of the second joint of the flagellum, and not four times as stated therein (R.M., T.M.).

P. capensis, Brauns (Figs. 17, 17 a). *Verh. Zool. Bot. Ges. Wien.* LVI, 55, ♀, ♂. 1906.

♀, 7–8 mm. long. Black, mandibles ferruginous, tarsi brown, apical margins of all the abdominal segments narrowly testaceous. Clypeus and the sides of the lower half of the face covered with greyish silvery pubescence, the rest of the head, thorax and abdomen with very fine pubescence, more or less yellowish grey on the thorax, and silvery on the sides of the apical margins of the abdominal segments, forming almost complete transverse bands.

Median tubercle of the face smooth and shining, the face dull, punctured, closely and finely so at the sides and below, the punctures becoming gradually larger and more distant towards the moderately shining vertex; clypeus produced and obtusely tridentate in the middle, the middle portion sparsely punctured and shining. Scape and first two joints of the flagellum punctured and shining. Back of the head behind the eyes shining, finely and sparsely punctured. Mesonotum and scutellum shining, sparsely and fairly finely punctured. Metanotum densely punctured and dull in the middle, longitudinally, striate at the sides. Dorsal field of epinotum sharply marginate, reticulate-rugose, the sides striato-rugose and punctate in between, the declivity coriaceous and rugose, with a median longitudinal sulcus. Pronotum dull and densely punctulate. Mesopleurae shining, coarsely and sparsely punctured. Abdomen closely and fairly strongly punctured (but the punctures smaller than those on the vertex and mesonotum), more finely on the depressed apical margins; the ventral segments shining and less closely punctured than the dorsal. Pygidial area trapezoidal, feebly marginate at the sides, the apex rounded, shining and almost impunctate. Wings brownish, the veins black. Legs feebly spinose, tarsal comb composed of long, black cilia. Eyes moderately convergent above, the distance between them on the vertex equal to twice the length of the scape. First abscissa of the radius shorter than the second, the latter very nearly as long as the third; the distance between the recurrent veins on the cubitus nearly as great as the length of the first abscissa of the radius.

♂. Eyes a little more convergent above, the distance between them on the vertex being equal to one and two-thirds the length of the scape. The sides of clypeus and face up to the anterior ocellus, and the space between the latter and median tubercle more densely pubescent, the pubescence silvery. Mandibles flavous, the tooth and apex blackish. The lower edge of the mesopleurae is produced into a blunt tooth in front, and into a longer and more acute one

behind, directed backwards. The fourth sternite has a transverse ridge on each side in front of the apical margin. Otherwise like the ♀.

Willowmore, C.P. Type in coll. Brauns.

PARAPIAGETIA Kohl

Verh. Zool. Bot. Ges. Wien. xxxiv, 263. 1884.

CHARACTERS. Head wider than the thorax. Inner margins of the eyes convergent above. Ocellar area round and very tumid, the ocelli situated on its periphery; the anterior ocellus is round and convex, the posterior flattened, elongate and most indistinct. Mandibles excised on their lower margins. Clypeus short, wide and flat, the anterior margin sometimes toothed in the ♀. Pronotum not elongate, much depressed below the level of the mesonotum. First segment of abdomen subpetiolate, the second hardly wider behind than long. Pygidial area distinct.

Front wing: radial cell appendiculate; three cubital cells, the first a little larger than the other two combined, the second narrower on the radius than on the cubitus and receiving both recurrent veins, the third oblique.

Hind wing: the cubitus arises beyond the end of the submedial cell; the basal lobe extends beyond the end of the submedial cell. Tarsal comb present in the ♀. Legs stout and strongly spinose; middle tibiae with one spur; claws unarmed and long.

Hab. Palearctic and Ethiopian regions.

KEY TO THE SPECIES OF *PARAPIAGETIA*

- (4) 1. First abdominal segment longer than wide across the apical margin.
- (3) 2. Shining, almost glabrous. Median area of clypeus slightly produced, its anterior margin arcuate, rectangular at the sides in the ♀: pygidial area in the ♂ deeply and arcuately emarginate at the apex. *vernalis* Brauns.
- (2) 3. ♀. Densely pilose on the epinotum. Median area of clypeus produced, truncate, the truncation forming a vertical and transversely oval area bounded by a raised margin which is interrupted above in the middle; ♂, pygidial area rounded at the apex. *capensis* Brauns.
- (1) 4. First abdominal segment wider than long.
capensis Brauns. var. *rhodesianum* Arnold

P. capensis Brauns. *Deutsch. Ent. Zeitschr.* p. 666, ♀, ♂. 1910.

♀, 7 mm. long. Black, mandibles testaceous, their apices black. Legs, reddish yellow, the anterior femora at the base above and all the coxae and trochanters, black. Tegulae testaceous. Wings hyaline, veins and pterostigma testaceous.

Sides of clypeus and of lower third of face, and the temples clothed with long, silvery pubescence. Dorsum of thorax almost glabrous, the sides of the mesonotum anteriorly, the mesopleurae and sides of epinotum with a sparse, exerted and silvery pilosity. Abdomen with an exceedingly fine, almost powdery, greyish pubescence, very sparse; the testaceous apical margins with longer and silvery pubescence which forms indistinct transverse bands. The pygidial area with yellowish and decumbent bristles. Shining, the head very sparsely, finely and shallowly punctate, with a few larger punctures on the vertex. Median area of clypeus sparsely and coarsely punctured. Mesonotum and scutellum apparently impunctate, but under a high magnification these are seen to be exceedingly finely and sparsely punctured, with here and there a larger puncture. Sides of pronotum sharply and transversely striate. Epinotum very finely and transversely striate, the declivity similarly sculptured

but with punctures between the striae and with a cuneiform median and shining fovea. Abdomen impunctate.

Median area of clypeus produced, its apex narrowly emarginate in the middle and with a prominent transverse torus just behind the anterior margin. On each side of the produced area the margin is armed with two small teeth and from them is continued in a concave curve towards the base of the mandibles. Eyes moderately convergent above, the distance between them on the vertex being equal to three and a third times the length of the second joint of the flagellum. A narrow impressed line extends from the clypeus to the anterior ocellus, and a narrow U-shaped gutter lies behind the ocellar swelling. Second joint of the flagellum twice as long as the first. First segment of the abdomen longer than its apical width.

Second abscissa of the radius equal to the first, or very nearly so, and equal to the space on the cubitus between the two recurrent veins.

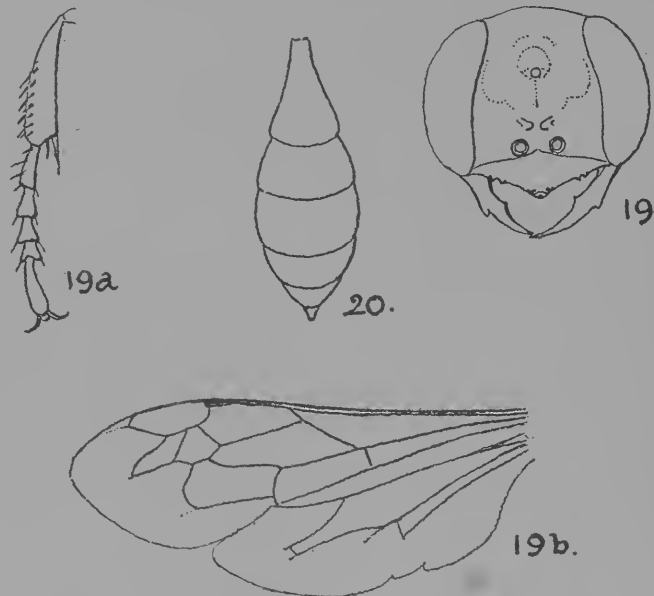


Fig. 19. *Parapiagetia capensis* var. *rhodesianum*, ♀, head.

Fig. 19 a. The same, posterior tibia and tarsus.

Fig. 19 b. The same, wing.

Fig. 20. *P. vernalis*, ♀, abdomen.

Last tarsal joints very long, that of the front pair of legs two-thirds as long as the metatarsus, those of the middle and hind legs longer than the metatarsus. Anterior metatarsal comb composed of six stiff yellow spines. The middle and hind tibiae and tarsi with yellow spines.

♂, 5-7 mm. long. Colour as in the ♀, but all the femora, excepting their apices, are black. The pilosity is finer but more abundant than in the ♀, and on the thorax somewhat woolly. The sculpture as in the ♀ but more superficial, the striae on the epinotum being almost obsolete. Median area of clypeus triangularly produced and ending in a stout tooth. Otherwise like the ♀.

Willowmore, C.P. December to February. Type in coll. Brauns.

var. *rhodesianum*, v.n. (Figs. 19, 19 a, 19 b)

♀, 9.5 mm. long. Colour, sculpture, pilosity and pubescence as in the type of the species, excepting the wings which are tinged with ochreous, and the

legs, which are of a darker yellow. It is also larger than the type of the species, and differs also in having the first abdominal segment wider at the apical margin than it is long.

Sawmills, S.R. February. Nesting in loose sandy soil.

Type in the R.M. coll. (T.M.).

var. *ferox*, v.n.

♀, 11.5 mm. long. This differs from the type of the species by its much greater size, and by having the first three abdominal segments pale ferruginous, the apical margins of the fourth and fifth segments flavo-testaceous, and the apical segment ferruginous.

Victoria Falls, S.R. Type in R.M. coll.

P. vernalis, Brauns (Fig. 20). *Deutsch. Ent. Zeitschr.* p. 667, ♀, ♂. 1910.

♀, 6.3 mm. long. Black, tibiae, tarsi and tegulae reddish ochreous, mandibles ferruginous, their apices black. Wings hyaline, veins and pterostigma brown.

Face microscopically and shallowly punctured. Vertex and temples impunctate. Pronotum longitudinally striolate; epinotum shining, its sides finely and vertically striate, the dorsum very shallowly, sparsely and transversely striate, the declivity exceedingly finely punctured and longitudinally sulcate in the middle. The rest of the thorax and the abdomen, impunctate and shining. Sides of epinotum with an outstanding, whitish and not dense pilosity; elsewhere the pubescence is microscopic.

Pygidial area triangular, rounded at the apex, sparsely and very shallowly punctured. Median area of clypeus slightly produced, its anterior margin arcuate, ending on each side rectangularly. Eyes convergent above, the interocular space on the vertex being equal to about the length of the first three joints of the flagellum. A fine impressed line extends downwards from the anterior ocellus to a little pit just above the antennal sockets, and below the pit there is a low transverse torus. First abdominal segment one and a half times longer than wide behind. The whole abdomen oblongo-ovate, narrower and relatively longer than in *capensis*. Second and third abscissae of the radius equal, both a little longer than the first, the latter as long as the distance between the recurrent veins on the cubitus.

♂, 6 mm. long. Median area of clypeus ending in front in a sharp triangular tooth. Face finely but distinctly punctured. Mesonotum and scutellum very sparsely and finely punctured, the dorsum of the epinotum more distinctly strigose than in the ♀. First segment of abdomen narrower than in the ♀, twice as long as wide behind. Pygidium coriaceous, reddish, the apex deeply and arcuately emarginate. Otherwise like the ♀.

Willowmore, C.P. Type in coll. Brauns.

KOHLIELLA Brauns.

Deutsch. Ent. Zeitschr. p. 668. 1910.

CHARACTERS. ♂. Eyes large, reaching the base of the mandibles below, convergent above. Anterior ocellus round, the posterior ocelli flat and elongate. Face with a low pyramidal swelling below the anterior ocellus, the upper part of the swelling more or less excavated. Mandibles excised on the lower margin, the inner margin with two teeth, one near the base, the other not far from the apex. Temples narrow. Pronotal collar depressed below the level of the mesonotum. No epicnemium. Thorax with the build of a *Tachysphex*. Abdomen with eight ventral and seven dorsal plates; no pygidial area

present. The abdomen is rather narrow at the base, not unlike that of *Parapiagetia*, but is not petiolate, and unlike *Prosopigastra*, is very finely punctured. Legs thin, feebly spinose, the anterior femora excised below near the base. Middle tibiae with one calcar.

Front wing: radial cell short and widely truncated; the first transverse cubital vein angulated inwards in the middle; the second cubital cell narrower on the radius than on the cubitus, roughly pentagonal, the third cubital cell very small, with a short stalk on the cubitus, shaped like a tuning-fork (see Fig. 21 b).

K. alaris Brauns (Figs. 21, 21 a, 21 b). *Loc. cit.* p. 669, ♂.

♂, 6 mm. long. Black, tarsi ferruginous. Tegulae testaceous; the apical margins of the abdominal segments flavo-testaceous. Wings hyaline, the veins brown. Sides of clypeus and the face up to about the level of the anterior ocellus covered with a coarse, brassy pubescence; the edges of the median swelling more or less bald. Back of the head, mesonotum at the sides, mesopleurae, and epinotum (excepting the dorsum), with long whitish pubescence, outstanding and longer on the epinotum than elsewhere. Abdomen with

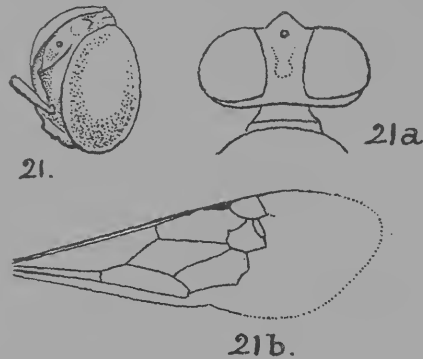


Fig. 21. *Kohliella alaris*, ♂, head, side view.

Fig. 21 a. The same, head, seen from above.

Fig. 21 b. The same, wing.

streaks of very inconspicuous and short pubescence on the apical margins. Tibiae and tarsi finely pubescent, the femora almost glabrous, smooth and shining.

Clypeus shining, with a few large punctures; face and median swelling closely punctured and dull, the vertex behind the ocelli moderately shining, sparsely and very finely punctured. A short median groove extends from the occipital margin forwards, but does not reach the posterior ocelli. Promesonotum, scutellum and metanotum finely and closely punctured, slightly shining between the punctures, the metanotum more closely punctured and duller. Epinotum dull, microscopically and transversely rugulose or striolate. Abdomen nitidulous, microscopically punctulate. Ventral plates smooth and shining, towards the apex of the abdomen sparsely and feebly punctured.

Median area of clypeus wide and convex, a little produced or lobed, the lobe with a small median excision and subdentate on each side. Antennae moderately long and slender, the second joint of the flagellum a little longer than the third, not quite twice as long as the first. The interocular distance on the vertex is equal to the length of the second joint plus half of the first. Pronotal collar linear above. Mesonotum one-third wider across the tegulae

than long, distinctly longer than the epinotum. Scutellum convex. Dorsum of epinotum twice as wide at the base as long in the middle. Eighth ventral plate of abdomen flat, rounded at the apex; the seventh tergite transversely truncate, shining and sparsely punctured. Spines on the legs whitish, the anterior metatarsus with five, and the following joints each with one, long cilia.

Willowmore, C.P. November. Type in coll. Brauns. Modderfontein, January, leg. Brauns, in my collection.

This is a remarkable insect, easily recognised by the peculiar venation. It appears to combine the characters of *Prosopigastra*, *Tachysphex*, and in the abdomen, of *Parapiagetia*.

SCHISTOSPHEX gen. nov.

CHARACTERS. ♀. Sixth tergite deeply emarginate, the angles of the emargination dentiform, the pygidial area about two-thirds the length of the tergite and indistinctly defined by feeble, oblique margins on each side; the sixth sternite longer than the tergite and projecting beyond it, the sting-sheath exposed.

In all other characters exactly like *Tachysphex*.

Type of genus, *S. Breijeri*.

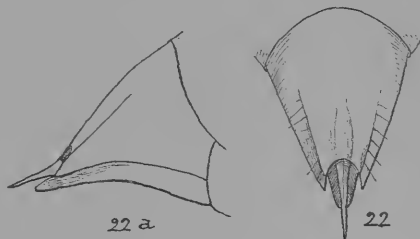


Fig. 22. *Schistosphex Breijeri*, ♀, apex of abdomen.

Fig. 22 a. The same, seen from the side.

S. Breijeri, sp.n. (Figs. 22, 22 b).

♀, 16.5 mm. long. With a few minor exceptions, this species bears a striking resemblance to *Tachysphex Marshalli* Turner in colour and sculpture.

Black, mandibles excepting their piceous apices, a transverse and oblong spot on the middle of the clypeus, the scape and first two joints of the flagellum, the tegulae, sixth abdominal segment and the legs, pale ferruginous; the coxae, trochanters and the base, more or less, of the middle and hind femora, black. Face, sides of the clypeus and back of the head covered with short, pale golden pubescence, not very dense; thorax with a short, outstanding and inconspicuous, brownish pubescence. Abdomen microscopically pubescent above, not forming transverse bands on the apical margins; apical margins of the sternites with a few long hairs. Median area of clypeus shining, with a few large and shallow punctures, the lateral pieces of the clypeus, the face and vertex, dull, closely and finely punctured. The back of the head very finely and distantly punctured. Thorax dull, finely, very shallowly and fairly closely punctured; dorsum of epinotum microscopically reticulate, with a few longitudinal rugae on its basal half, the sides of the epinotum obliquely, and fairly closely striolate, the declivity coarsely and transversely striate, longitudinally grooved in the middle, the brow marginate. Abdomen dull above, the sculpture microscopic, the ventral surface very finely punctured, with a few larger punctures scattered over the sixth sternite; the pygidial area very finely

rugulose, with a few shallow punctures on each side, feebly excavated lengthwise in the middle posteriorly.

Median area of clypeus somewhat gibbose, its anterior margin convex and feebly sinuate in the middle, armed on each side with two very short teeth or blunt angles. Second joint of flagellum as long as the third, three times longer than the first, which is as long as wide. The interocular distance on the vertex is equal to the length of the second joint of the flagellum. Temples narrow, about one-third of the lateral width of the eyes. On the vertex the eyes do not quite reach to the back of the head. The dorsum of the epinotum is as long as the mesonotum, moderately convex transversely, the declivity vertical.

Anterior tarsi with a comb composed of long, pointed and fairly stiff cilia, of which there are eight on the metatarsus.

Wings fusco-violaceous, the veins black. Radial cell rounded apically, the accessory cell distinct; second and third abscissae of the radius subequal, each a little longer than the first.

Kraaifontein, Transvaal (leg, Dr H. G. Breijer). Type in Transvaal Museum coll.

It is possible that the specimen is somewhat worn and that in the fresh state the clypeus is entirely pubescent.

ANNALS

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VOLUME IX

PART 3 *containing*

THE SPHEGIDAE OF SOUTH AFRICA

By GEORGE ARNOLD, D.Sc., A.R.C.Sc., F.E.S.

PART II

Issued March 24, 1923

PRINTED AT THE UNIVERSITY PRESS

CAMBRIDGE, ENGLAND

1923

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BY GEORGE ARNOLD, D.Sc., A.R.C.Sc., F.E.S.

Curator of the Rhodesia Museum, Bulawayo

PART II

With Plate V, 18 figures and diagram

IN the key to the genera, published in the first part, the genus *Miscophoides* Brauns was omitted by an oversight. This should follow paragraph 4 of the key as follows:

- (4 b) 4 a. Venation greatly reduced, the radial, cubital and discoidal cells of the fore wing all obsolete. Pronotum large, fully as long as the mesonotum. *Miscophoides* Brauns
- (4 a) 4 b. At least one cubital cell present.

In addition to this, a new genus has to be inserted in the key. It is represented by a small Larrid allied to *Tachysphex*, from which it differs by the absence of the episternal suture, the greater development of the pronotum, and by the presence of two sinuous raised lines on the face, enclosing a very open lyre-shaped space. The key, after paragraph 77, should therefore be emended as follows:

- (77) 78. Sixth tergite entire; sting sheath hidden.
- (78 b) 78 a. Face with two sinuous raised lines extending outwards from above the antennal sockets to about the middle of the eyes; the latter not strongly convergent above, the face wide; episternal suture absent; pronotum not much depressed below the level of the mesonotum, not linear behind, but with a well developed collar or posterior dorsal face. *Atelosphex* Arnold
- (78 a) 78 b. Face without such lines; episternal suture present, pronotum nearly always linear behind. *Tachysphex* Kohl

In the introduction to this work I omitted to mention one or two points which, without further explanation, may prove puzzling to the reader. It is therefore to be understood that the term "microscopically punctured" or "sculptured" means a degree of sculpture which cannot

be easily resolved with a pocket aplanatic lens magnifying less than 20 diameters. It is, however, to be noted that such sculpture, by the use of a stereoscopic binocular microscope, may be resolved with a considerably lower magnification.

The term "reticulate-punctate" has been reserved in these pages to describe a form of sculpture resembling that of a thimble, in which the spaces between the punctures are not wider than the punctures themselves.

In the keys to the species it is to be noted that by the expression "interocular distance" is meant the least distance between the eyes on the vertex; for the sake of brevity, the words "least" and "on the vertex" have been omitted.

TACHYSPHEX Kohl.

Berlin Ent. Zeitschr. xxvii, 166. 1883

CHARACTERS. Inner margins of the eyes more or less convergent towards the vertex. Ocelli placed on a raised area, the anterior ocellus round and convex, the posterior flat and elongate. Behind the ocellar area there is almost always a transverse impression of varying depth and length, concavo-convex, U-shaped or V-shaped. Face without swollen lines or tori margining the eyes. Mandibles excised on the lower margin not far from the middle, the inner margin bidentate in the ♀, unarmed or with one tooth in the ♂. Pronotum short and deeply depressed below the level of the mesonotum, the posterior portion linear when viewed from above, very rarely with a raised posterior dorsal face or collar. Epicnemium absent. Episternal suture well defined. Epinotum shorter than wide, without a dorsal field, the declivity vertical or nearly so and with a median longitudinal fovea just below its brow. Occasionally there is a raised transverse margin, interrupted in the middle, at or a little below the junction of the dorsum and the declivity.

A glabrous and triangular pygidial area present in the ♀, nearly always sharply marginate at the sides; in the ♂ the pygidium is trapezoidal and without a defined dorsal area.

Tibiae spinose. Middle tibiae with one calcar or spur. The tarsal comb in the ♀ is usually composed of long, thin and flexible cilia, but sometimes they are short and stiff and bristly; in the ♂ the comb is rarely so distinct as in the ♀. Claws unarmed, pulvilli large. Anterior tibiae of the ♂ more or less excised on the outer margin near the base, thinly pilose outwardly, never densely pubescent as in *Tachytes*.

Front wing; radial cell usually appendiculate. Three cubital cells present, the second receiving both recurrent veins, the third extended tongue-shaped towards the apex of the wing. The basal vein arises beyond the end of the submedial cell.

Hind wing; the cubitus arises beyond the end of the submedial cell; basal lobe long, extending beyond the end of the submedial cell.

The males are usually smaller than the females, and have shorter and stouter antennae.

Hab. Palaearctic, Nearctic, Ethiopian and Oriental Regions.

The species of this genus nest in sandy soil and provision their young with grasshoppers, crickets and other Orthoptera. Two species discovered by Dr Brauns in the Karroo have unusual nesting habits, in that they use burrows in wooden logs and dead plants.

KEY TO THE SPECIES OF *TACHYSPHEX* ♀♀

- (4) 1. Black species with dark fuscous wings.
- (3) 2. Wings with a strong violaceous tint; the apical abdominal segment rufo-testaceous; interocular distance on the vertex slightly less than the length of the second joint of the flagellum. **Marshalli** Turner
- (2) 3. Wings without violaceous tint; apical abdominal segment black; interocular distance equal to the combined length of the first and second joints of the flagellum. **punctatus** Smith
- (1) 4. Wings not dark fuscous.
- (12) 5. Wings moderately fuscous, fusco-hyaline or fusco-flavo-hyaline.
- (11) 6. Whole body black. 10–14.5 mm. long.
- (10) 7. Mesonotum finely punctured; dorsum of epinotum finely and closely reticulate-punctate.
- (9) 8. Legs red; antennae short, the second joint of the flagellum about one-third longer than the first; 11 mm. long. **Braunsi** Arnold
- (8) 9. Legs black, the second to fifth tarsal joints ferruginous; antennae long and slender, the second joint of the flagellum twice as long as the first. 14.5 mm. long **diabolicus** Arnold
- (7) 10. Mesonotum coarsely and sparsely punctured; dorsum of epinotum longitudinally striato-rugose. **punctatiformis** Brauns
- (6) 11. The greater part of the first, and the whole of the second abdominal segment, red; very coarsely punctured, the abdomen strongly and closely punctured; the dorsum of the epinotum coarsely reticulate. 8.5 mm. **Turneri** Arnold
- (5) 12. Wings hyaline or flavo-hyaline, in some species very feebly fusco-hyaline.
- (40) 13. Body, excluding the eyes, black; at the most only the apical fourth of the abdomen otherwise coloured.
- (27) 14. Larger species, usually more than 10 mm. long, rarely as little as 9 mm.
- (18) 15. Pilosity abundant on the thorax, especially on the epinotum where it more or less obscures the sculpture; transverse fasciae of pubescence on the abdomen quite conspicuous.
- (17) 16. Mesonotum dull, microscopically reticulate-punctate; eyes greenish yellow in life, yellow when dead; interocular distance equal to twice the length of the second joint of the flagellum. **bruneiceps** Arnold
- (16) 17. Mesonotum sharply and fairly finely punctured, aciculate between the punctures; eyes blackish green in life, dull olive when dead; interocular distance barely greater than the length of the second joint of the flagellum. **syriacus** Kohl
- (15) 18. Pilosity less abundant, never obscuring the sculpture of the epinotum.
- (20) 19. All the tibiae and tarsi, the apical third or more of the front and middle femora, and all the hind femora ferruginous. **sericeus** Smith
- (19) 20. Legs otherwise coloured.
- (22) 21. The fifth and sixth, and the apical margin of the fourth abdominal segments, ferruginous; epinotum sharply and longitudinally striate, punctulate between the striae; interocular distance a little shorter than the second joint of the flagellum. **vulneratus** Turner
- (21) 22. Abdomen entirely black.
- (24) 23. Wings faintly fusco-hyaline, strongly tinged with ochreous proximally; mesonotum finely and closely punctured and dull. **Barkeri** Arnold
- (23) 24. Wings without ochreous tint; mesonotum coarsely punctured and shining between the punctures.
- (26) 25. Epinotum finely and longitudinally rugoso-striate; tegulae flavous; puncturation of mesonotum shallow and uneven. **crassipes** Arnold

- (25) 26. Epinotum strongly and longitudinally rugose, becoming reticulate-rugose posteriorly; tegulae piceous; puncturation of mesonotum deep, and except in the middle, fairly close. *ambiguus* Arnold
- (14) 27. Smaller species, 8 mm. or less, rarely as much as 9.5 mm.
- (29) 28. Legs bright ferruginous, only the basal two-thirds of the front and middle femora, and basal third of the hind femur black; apex of abdomen fusco-ferruginous. Flagellum short. Interocular distance equal to the length of the first two joints of the flagellum. *karrooensis* Arnold
- (28) 29. Legs black, or in greater part so.
- (31) 30. Face with two prominent tubercles in the middle, set close together a little above the antennal sockets, and more or less wedge-shaped when seen from the side. *bituberculatus* Arnold
- (30) 31. Face without tubercles.
- (33) 32. Antennae long and slender, reaching back to beyond the middle of the epinotum; second joint of the flagellum from two and one-half to two and three-quarter times longer than the first. *filiicornis* Kohl
- (32) 33. Antennae shorter, the second joint of the flagellum twice as long as the first, or less.
- (35) 34. Small species, 6 mm. long; the lower half of the face excavated, the brow of the excavation smooth and shining; vertex and mesonotum shining, strongly and not closely punctured; epinotum coarsely and longitudinally rugoso-reticulate. *minutulus* Arnold
- (34) 35. Larger species, more than 6 mm. long.
- (37) 36. Fifth tarsal joint elongate, nearly as long as the second; the claws long and asymmetrical, the longer claw of all the legs being nearly as long as the fifth tarsal joint. *harpax* Arnold
- (36) 37. Claws symmetrical and not unusually long, the fifth tarsal joint considerably shorter than the second.
- (39) 38. Wings pale flavo-hyaline, becoming faintly fuscous towards the apex; legs short and stout; antennae short, the second joint of the flagellum barely one-third longer than the first; thorax dull, very finely and closely punctured. *Oberon* Arnold
- (38) 39. Wings hyaline; legs fairly slender; antennae slender and not very short, the second joint of the flagellum twice as long as the first; head and thorax fairly shining, coarsely punctured; the epinotum coarsely rugoso-striate. *Titania* Arnold
- (13) 40. Abdomen in greater part red, at least the first two segments red.
- (44) 41. Wings flavo-hyaline, and more or less fuscous towards the apex; fairly large species, over 13 mm. long.
- (43) 42. Last three segments of abdomen blackish; dorsum of epinotum coriaceous-reticulate; antennae short and stout. *asinus* Arnold
- (42) 43. Abdomen entirely flavo-ferruginous; dorsum of epinotum finely and closely reticulate-punctate; antennae slender. *Panzeri* v.d. Lind. var. *rhodesianus* Bischoff
- (41) 44. Wings hyaline.
- (46) 45. Head and thorax strongly and closely punctured; dorsum of epinotum strongly and longitudinally rugoso-striate, reticulate between the striae. *prosopigastroides* Bischoff
- (45) 46. Head, thorax and epinotum finely sculptured.
- (48) 47. Larger forms, 12 mm. long or more; abdomen entirely ferruginous, if not so, the pygidium at least remains ferruginous. *Panzeri* var. *dolosus* Arnold
- (47) 48. Smaller forms, not more than 11 mm. long, usually between 8 and 10 mm.; last three segments of abdomen black.
- (50) 49. Pronotum with a fairly distinct collar; mesonotum microscopically and closely punctured. *Panzeri* var. *aethiopicus* Arnold
- (49) 50. Pronotum without a collar, its posterior portion linear above; mesonotum finely but distinctly punctured. *Panzeri* var. *Caliban* Arnold

KEY TO THE ♂♂

- (4) 1. Black species with dark fuscous wings.
- (3) 2. Wings with a strong violaceous tint; seventh tergite rufo-testaceous; interocular distance on the vertex equal to the combined length of the two basal joints of the flagellum. Marshalli Turner
- (2) 3. Wings without a violaceous tint; seventh tergite black; interocular distance greater than the combined length of the two basal joints, but equal to that of the second and third joints. punctatus Smith
- (1) 4. Wings not dark fuscous.
- (10) 5. Wings moderately fuscous, fusco-hyaline or fusco-flavo-hyaline, at least not glassy clear.
- (9) 6. Mesonotum finely punctured; dorsum of epinotum finely and closely reticulate-punctate.
- (8) 7. Larger species, 12 mm. long; eyes bice-green in life, greenish yellow when dead; interocular distance nearly equal to the combined length of the first and second joints of the flagellum. diabolicus Arnold
- (7) 8. Smaller species, 9 mm. long; eyes black; interocular distance distinctly greater than the combined length of the first and second, but equal to that of the second and third joints of the flagellum. Braunsi Arnold
- (6) 9. Mesonotum coarsely and sparsely punctured; dorsum of the epinotum longitudinally and closely striato-rugose. punctatiformis Brauns
- (5) 10. Wings hyaline or flavo-hyaline, never distinctly fuscous or fusco-flavous.
- (30) 11. Body, excluding the eyes, black, if at all ferruginous, then at least the first four abdominal segments are black.
- (15) 12. Epinotum with long pilosity, more or less obscuring the sculpture; face with outstanding pilosity, plainly visible from above.
- (14) 13. Basal half of first tergite with a dense, long and exerted pilosity; interocular distance a trifle more than the length of the second joint of the flagellum; mesonotum finely but distinctly punctate-rugulose. syriacus Kohl
- (13) 14. Basal half of first tergite without dense pilosity; interocular distance about twice the length of the second joint of the flagellum; mesonotum microscopically reticulate-punctate. bruneiceps Arnold
- (12) 15. Epinotum without long and dense pilosity.
- (19) 16. Eyes lemon yellow in life, ochreous yellow when dead; tibiae and tarsi ferruginous.
- (18) 17. Femora with only the apical third ferruginous; pubescence of face reddish golden; interocular distance equal to the length of the second joint of the flagellum. sericeus Smith
- (17) 18. Femora blackish on the basal half, only the posterior pair almost entirely ferruginous; pubescence of the face brassy golden; interocular distance equal to the combined length of the first and second joints of the flagellum. karrooensis Arnold
- (16) 19. Eyes black or blackish green when dead; legs black, or if the tibiae are ferruginous then the last two segments of the abdomen are also of that colour.
- (21) 20. Last two abdominal segments ferruginous. vulneratus Turner
- (20) 21. Abdomen entirely black.
- (25) 22. Larger species, more than 7.5 mm. long.
- (24) 23. Interocular distance equal to the combined length of the first and second joints of the flagellum. crassipes Arnold
- (23) 24. Interocular distance nearly equal to the combined length of the first three joints of the flagellum. ambiguus Arnold
- (22) 25. Smaller species, less than 7.5 mm. long.

- (27) 26. Abdomen closely and sharply punctured; dorsum of epinotum very coarsely longitudinally rugose; 7.3 mm. long. **Titania** Arnold
- (26) 27. Abdomen microscopically punctured; dorsum of epinotum not coarsely rugose; less than 7 mm. long.
- (29) 28. Head moderately, mesonotum distinctly shining, not very closely punctured; 5 mm. long. **minutulus** Arnold
- (28) 29. Head and mesonotum dull, closely punctured; 5.3-6.5 mm. long. **flicornis** Kohl
- (11) 30. Abdomen, or at least the two basal segments of same, ferruginous.
- (32) 31. Fifth and sixth sternites have at their bases a membranous transverse lamella. **Panzeri**, v.d. L. var. **aethiopicus** Arnold
- (31) 32. Fifth and sixth sternites simple.
- (36) 33. Sculpture of at least the head and thorax very coarse; thorax without adpressed pubescence.
- (35) 34. Mesonotum dull, coarsely reticulate-punctate; dorsum of the epinotum strongly and longitudinally rugoso-striate; abdomen finely punctured, the first three and greater part of the fourth segment ferruginous. **sipapomae** Arnold
- (34) 35. Mesonotum distantly and very strongly punctate and shining; dorsum of epinotum strongly reticulate-rugose; first three abdominal segments strongly punctured, only the second and apical half of the first dark red. **Turneri** Brauns
- (33) 36. Sculpture of head and thorax delicate.
- (38) 37. Fourth to seventh sternites strongly punctured. **Tuckeri** Arnold
- (37) 38. Fourth to seventh sternites not strongly punctured.
- (40) 39. Large species, 13 mm. long; pubescence of thorax and abdomen reddish golden. **Panzeri** var. **rhodesianus** Bischoff
- (39) 40. Smaller species, less than 10 mm.; pubescence of thorax and abdomen silvery white.
- (42) 41. Legs ferruginous, black only at the extreme base of the femora; abdomen pale ferruginous, slightly infusate on the fifth and sixth tergites. **Panzeri** var. **dolosus** Arnold
- (41) 42. More than the basal half of all the femora black; not more than the first two abdominal segments dark ferruginous, the rest black (a rare variety has all the segments black with piceous apical margins). **Panzeri** var. **Caliban** Arnold

T. punctatus Smith (Fig. 23). *Cat. Hymen. Brit. Mus.* iv, 282, ♂. 1856.

♀, 10-12 mm. Black, mandibles castaneous except at the base. Tarsi dark reddish brown, the last two joints paler.

Lower part of face with short, scanty and greyish pubescence, the sides of the epinotum similarly pubescent, otherwise almost glabrous. Median area of clypeus tumid, slightly produced, shining, sparsely and coarsely punctured, its anterior margin straight, with the lateral angles subdentiform. The rest of the clypeus, face, vertex and temples dull, very closely and very finely punctured, the punctures a little larger and more distant on the vertex. Pro-mesonotum, scutellum and metanotum nitidulous, finely, sharply and fairly closely punctured, the punctures smaller and denser on the metanotum than elsewhere. Mesopleurae dull, very finely coriaceous-punctate. Dorsum of epinotum dull, closely and finely reticulate-punctate, the sides shining, obliquely and finely striate, the declivity shining and transversely striate.

Abdomen microscopically sculptured, feebly shining, the pygidial area



Fig. 23. *Tachysphex punctatus*, apical segment of abdomen, ♀ and ♂.

shining, coarsely punctured, elongate triangular, twice as long as wide at the base, the apex subacute.

The interocular distance on the vertex is equal to the length of the first and second joints of the flagellum. The latter is fairly long and slender, the second joint nearly three times as long as the first. The epinotum is fairly long, being only a little shorter than the mesonotum, and barely half as wide again at the base as it is long in the middle; the declivity is distinctly marginate just below its brow.

Femora shining and sparsely punctured. The spines on the legs reddish brown, the anterior metatarsus with a comb composed of about seven or eight long, stiff hairs. Wings fuscous, the veins black; the first and third abscissae of the radius of equal length, each a trifle longer than the second, the accessory cell very small.

♂, 8 mm. Last three joints of the tarsi ferruginous. The interocular distance on the vertex equal to the length of the second and third joints of the flagellum combined. Eighth sternite emarginate, the lateral angles produced into short and acute teeth; the seventh tergite rounded at the apex. Otherwise like the ♀.

Willowmore, C.P. (leg. Brauns), November. (R.M.)

T. Marshalli Turner. *Ann. Mag. N.H.* xx, No. 118, p. 293, ♀, ♂. 1917.

“♀. Nigra; mandibulis basi, clypeo, flagello articulis tribus basalibus, tegulis, segmento abdominali sexto, femoribus, tibiis tarsisque rufo-testaceis; alis fusco-violaceis, venis nigris; fronte, clypeoque basi aureo-pubescentibus.

♂. Feminae similis; flagello nigro; segmento dorsali sexto nigro, septimo rufo-testaceo.

Long. ♀ 15, ♂ 11 mm.

♀. Clypeus broadly subtruncate at the apex, with two minute teeth at the apical angles, shining and sparsely punctured. Eyes separated on the vertex by a distance not quite equal to the length of the second joint of the flagellum. Thorax very finely and closely punctured; median segment (*epinotum*) a little longer than the mesonotum, finely longitudinally rugulose, with short striae at the extreme base; the surface of the apical truncation strongly transversely striated, with a deep median sulcus. Abdomen microscopically punctured; the pygidial area lanceolate, pointed at the apex, with small scattered punctures. Radial cell rounded at the apex; second abscissa of the radius longer than the third; the space between the recurrent nervures on the cubitus equal to the third abscissa of the radius. Tarsal comb long; eight spines on the fore metatarsus.

♂. Eyes separated on the vertex by a distance equal to the combined length of the two basal joints of the flagellum; dorsal surface of the median segment coriaceous; anterior femora emarginate at the base; tarsal comb much shorter than in the female; seventh tergite subtruncate at the apex; eighth sternite widely emarginate, the angles forming spines.

Hab. Salisbury, Mashonaland (G. A. K. Marshall), April.

A variety with the apical segment in both sexes black, and the sculpture of the median segment in the female less developed, occurs in N.E. Rhodesia and Nyassaland; Luangwa River, July to September (S. A. Neave); Mlanje, 2300 ft., October (S. A. Neave).”

T. diabolicus n.sp. (Fig. 24).

♀, 14.5 mm. Black, tarsi ferruginous, the first two joints darker or reddish brown. Tegulae testaceous, wings moderately fuscous, paler towards the

apex, without any violaceous tint. Eyes in life blackish green. Lower half of face, sides of thorax, legs and dorsal surface of abdomen with a very short, almost microscopic, inconspicuous brownish yellow pubescence, the abdomen without pubescent fasciae, the ventral surface of the abdomen with a few blackish exserted hairs on the apical margins of the segments. Face, ex-



Fig. 24. *Tachysphex diabolicus*, eighth sternite and anterior femur of the ♂.

cepting the clypeus, pleurae and dorsum of epinotum dull, the mesonotum and tergites nitidulous, the ventral surface of the abdomen shining. Clypeus shining, sparsely and coarsely punctured. The rest of the head, the pro-mesonotum, scutellum, metanotum and pleurae very finely punctured, the head most closely so, the pleurae and metanotum more closely than the mesonotum and scutellum. Epinotum above closely reticulate-punctate, without striae at the base, the sides and the declivity transversely striate, the declivity less closely than the sides, slightly shining, the median sulcus deep. Abdomen above microscopically aciculate-punctate, a little more distinctly punctured below, the pygidial area lanceolate, twice as long as wide at the base, sharply marginate at the sides, the apex narrowly truncate, shining, sparsely and finely punctured on the lateral margins. Clypeus with the anterior margin of the median area transverse, ending on each side in a minute dentiform angle; impressed behind the anterior margin. Eyes strongly convergent above, the distance between them on the vertex equal to the length of the scape, slightly less than the length of the second joint of the flagellum; the flagellum long and thin. A median impressed and shining line extends from the anterior ocellus to a point a little above the antennal sockets.

Spines on the legs and tarsal comb blackish brown. The comb long, composed of stiff bristles, of which there are eight on the first joint.

First and second abscissae of radius subequal, the third about one-third longer than the second, the latter a little longer than the space between the recurrent veins on the cubitus.

♂, 12 mm. All the tarsi and tibiae, the apical third of the front and middle femora, and the apical half more or less of the hind femora, bright yellowish red. Eyes in life bice-green, pale greenish yellow when dead. Otherwise coloured like the ♀. Face with a dense brassy-golden pubescence, the clypeus and base of the mandibles outwardly with a similar pubescence but more sparse. Mesonotum more finely punctured, otherwise like the ♀ in sculpture and pubescence. Interocular distance on the vertex nearly equal to the combined length of the first and second joints of the flagellum; the latter shorter than in the ♀. Seventh tergite widely rounded at the apex, the eighth sternite bi-emarginate, bluntly angular in the middle, the lateral angles dentiform. Anterior femora distinctly and widely excised near the base. Otherwise like the ♀.

Closely allied to *T. Marshalli* Turner, from which it differs by the sculpture of the epinotum, the colour, and the shape of the eighth sternite in the ♂.

Sawmills, S.R. May. Type in the R.M. coll.

T. Braunsi n.sp. (Fig. 25).

♂, 9 mm. Black, mandibles castaneous, tibiae, tarsi and apical third or so of all the femora yellowish red, tegulae flavo-fuscous. Pilosity absent, the whole body sparsely clothed with a very fine and inconspicuous pubescence, greyish white on the head and thorax, brownish yellow on the abdomen, the apical margins of the segments piceous-testaceous, and without transverse pubescent fasciae. Dull; head, pro-mesonotum, scutellum and metanotum

finely, evenly and closely punctured, the temples microscopically so, the mesopleurae and mesosternum more distantly punctured. The dorsum of the epinotum exceedingly finely reticulate-punctate, the declivity transversely striate, the striae extending a little over the sides which are nearly smooth, microscopically and sparsely punctulate. Abdomen dull, microscopically punctured.

Face swollen below the anterior ocellus, with an impressed median vertical line, on either side of which, just above the antennal sockets, is a low, shining and oblong tubercle. Median area of the clypeus triangularly produced in front, the triangle wider than long, subacute at the apex, the apical margin smooth and shining and slightly depressed. Interocular distance on the vertex equal to the combined length of the second and third joints of the flagellum, the second half as long again as the first, and a little shorter than the third. Mesonotum one-third longer than the epinotum, the dorsum of the latter two-thirds wider at the base than long, only a little wider at the base than at the apex, marginate transversely just below the apex, the declivity subvertical, its brow not rounded. Apical margin of eighth ventral plate straight, with a minute tooth on each side. Anterior femora widely excised near the base. Wings fusco-hyaline, the veins dark brown; first and third abscissae of the radius subequal, the second a little longer, about half as long again as the space between the recurrent veins on the cubitus.

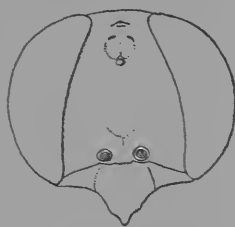


Fig. 25. *Tachysphex Braunsi*, ♂.

♀, 11 mm. Legs ferruginous, excepting only the inner basal two-thirds of the front femora, and the inner basal half of the middle femora, which are black. Pubescence of the face silvery. Apical fasciae on the abdominal segments distinct, especially when viewed from behind. Median area of the clypeus shining, sparsely and irregularly punctured with large punctures, except near the posterior margin where it is finely and closely punctured; the anterior margin very convex, less produced than in the ♂, with two minute teeth on each side. The rest of the clypeus closely and finely punctured and dull. Median portion of the face more swollen and less closely punctured than in the ♂, fairly shining, the impressed line in the middle deeper, the two tubercles above the antennal sockets larger and more prominent than in the ♂. Mesonotum, scutellum and metanotum shining, less closely and a little less finely punctured than in the ♂. Epinotum distinctly marginate between the dorsum and the declivity. Pygidial area triangular, about half as long again as wide at the base, shining, sparsely and not very strongly punctured. Interocular distance on the vertex equal to twice the length of the second joint of the flagellum. Legs stout, strongly spinose; the inner calcar of the hind tibia shorter than its metatarsus. The comb of the anterior tarsi composed of fairly thin yellowish cilia. Antennae short, the second joint of the flagellum about one-third longer than the first. Otherwise like the ♂.

Willowmore, C.P. (leg. Brauns). Type in the R.M. coll.

The nesting habits of this species, like those of *Turneri*, have been observed by Dr Brauns, and are quite unusual. It does not make burrows in the ground, but nests in tunnels in poplar stems, probably previously made by some beetle.

T. punctatiformis Brauns nom. in litt.

♀, 11 mm. Black, the last two joints of the front, and the last joint of the middle and hind tarsi, dark ferruginous. Clypeus and face feebly shining, the vertex, pro-mesonotum, scutellum and metanotum, very shining; the

epinotum dull. Face and thorax with a sparse, long and brownish grey pubescence, longest on the epinotum. Abdomen glabrous.

Median area of clypeus coarsely punctured, the anterior margin convex, sub-bidentate on each side; the lateral pieces of the clypeus and the face closely and finely punctured, the ocellar area much more finely, the vertex and occiput more sparingly punctured; the temples with a few scattered punctures. Mesonotum and scutellum with large and shallow punctures, the spaces between them being mostly two or three times as large as the punctures themselves. Mesopleurae microscopically rugulose, dull, shallowly and sparsely punctured; mesosternum shining, finely and sparsely punctured. Dorsum of epinotum closely and longitudinally striato-rugose, the sides finely and longitudinally striate, the declivity transversely so. Abdomen very finely and sparsely punctured, the depressed apical margins impunctate, the pygidium strongly and sparsely punctured below and at the sides, the pygidial area with a few scattered small punctures, subacute at the apex, not much longer than wide at the base. Interocular distance on the vertex is equal to twice the length of the second joint of the flagellum, or to the combined length of the first and second plus half the third. Spines on the legs dark brown, the comb of the anterior tarsus composed of long dull ochreous cilia, of which there are about nine on the first joint. Wings feebly tinged with fuscous, the veins brown. The first abscissa of the radius is a little longer than the second, the latter and the third of equal length; the third cubital cell very narrow, much produced on the cubitus, extending a good deal beyond the end of the radial cell.

♂, 10 mm. Pubescence of the face silvery, the last three tarsal joints ferruginous. Spines on the legs reddish brown. Sculpture of the mesonotum closer but shallower than in the ♀. Median area of the clypeus produced, longer than wide, its anterior margin feebly convex. Vertex wide, the interocular distance there being equal to the combined length of the first three joints of the flagellum. The latter is slender, all the joints except the first fully twice as long as wide. Eighth sternite like that of *diabolicus*, bisinuate emarginate, the lateral angles produced into small and acute teeth. The anterior tarsi without a distinct comb, the basal joint with six fine reddish yellow spines on the outer margin. Otherwise like the ♀.

Willowmore, C.P. October (leg. Brauns). Type in the R.M. coll.

Not unlike *punctatus* Smith, but with paler wings and coarser sculpture.

T. syriacus Kohl (Fig. 26). *Verh. Zool. bot. Ges. Wien*, xxxviii, 146, ♂. 1888. (*Tachytes nigroannulatus*) Bischoff, *Arch. f. Naturges.* p. 69, ♂. 1913.

♀, 9-12.5 mm. Black, middle third of the mandibles castaneous red, metatarsi blackish brown, the rest of the tarsal joints and the calcaria reddish brown, the spines on the legs pale ochreous, the tarsal comb brownish yellow. Eyes blackish green in life. Clypeus and face with a dense, long, silky and silvery pubescence, hiding the sculpture; vertex with a sparse pubescence of the same colour. Thorax and basal half of the first tergite covered with a long, fine and somewhat woolly pilosity, yellowish grey, fading to white in old specimens. This pilosity is erect, and particularly dense on the mesonotum, mesopleurae and epinotum, and longest on the latter segment. Legs and abdomen with a very fine decumbent and grey pubescence; the first four

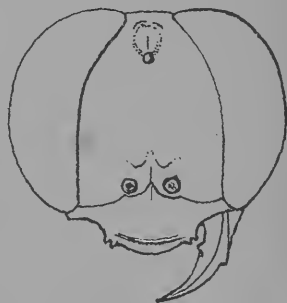


Fig. 26. *Tachysphex syriacus*, ♀.

tergites with conspicuous transverse fasciae of silvery pubescence on the apical margins; the fifth tergite with a few long yellowish hairs. Pygidium glabrous. Anterior half of the clypeus, disc of the mesonotum, scutellum and fifth dorsal segment, and all the ventral segments shining, the rest of the body dull.

Anterior half of the clypeus smooth, the rest of the head, the mesonotum, scutellum and mesopleurae closely and finely punctured, the spaces between the punctures aciculate. Epinotum densely coriaceous and finely punctate. Pygidial area very finely, closely and evenly punctate. Anterior margin of the clypeus distinctly convex, impressed behind the margin, the median area with two small blunt teeth on each side. Eyes strongly convergent above, the interocular distance on the vertex being equal to the length of the second joint of the flagellum, the distance between them across the clypeus two and a quarter times greater than across the vertex. Second joint of the flagellum as long as the third, a little more than twice as long as the first. Ocellar swelling shallowly impressed lengthwise in the middle.

Dorsum of epinotum fairly convex transversely, twice as wide at the base as long, the declivity vertical. Pygidial area triangular, longer than wide at the base, narrowly rounded at the apex, marginate at the sides. The tarsal comb composed of long flexible cilia, of which there are ten on the basal joint. First three abscissae of the radius subequal, the fourth a little longer than the second and third combined; veins reddish ochreous.

♂, 8-10 mm. Tarsi fuscous ochreous. Eyes bice-green in life, dull lemon yellow when dead. Face covered with a long, blackish and outstanding pilosity, intermixed with a few whitish hairs, longer than in *bruneiceps*. Interocular distance on the vertex equal to a little more than the length of the second joint of the flagellum. Pilosity on the thorax and abdomen less abundant than in the ♀, the puncturation of the mesonotum and scutellum finer and closer than in the ♀. Pygidium trapezoidal, dull and finely punctured. Otherwise like the ♀.

Bulawayo, Sawmills and Springvale, S.R. December to February.

A widely distributed species, recorded from the Mediterranean region, Gambia, Somaliland, British East Africa, Nyassaland and the Cape Province.

In Algerian specimens in the British Museum collection the puncturation of the thorax is closer and finer than in Rhodesian specimens, and that part is also duller. The pygidium is also more narrowly truncate in specimens from Nyassaland and Rhodesia. In the same collection there is a specimen from Algoa Bay in which the pilosity is almost ochreous, and the pubescent bands on the abdomen are dull golden.

T. nigroannulatus Bischoff is only a faded example of *syriacus*, somewhat smaller than the average. (R.M. and T.M. colls.)

T. bruneiceps n.sp.

♀, 12-12.5 mm. Closely allied to *syriacus*. Black, the apices of all the tibiae and metatarsi, and the whole of the remaining joints of the tarsi ferruginous. Eyes greenish yellow in life, ochreous olive when dead. Head, lower surface of the scapes, anterior corners of the mesonotum, mesopleurae and epinotum with long, abundant and pale yellow pilosity (fading to white in old specimens). Legs and abdomen with a fine, decumbent and pale yellowish white and slightly brassy pubescence, longer on the apical margins of the abdominal segments, where it forms distinct fasciae. Ventral surface of abdomen sparsely pubescent. The first tergite with a thin, pale yellowish and outstanding pilosity at the sides, not dense and obscuring the integument as in *syriacus*.

Head, mesonotum, mesopleurae and sides of the epinotum dull, microscopically reticulate-punctate, with a sparse, shallow and larger puncturation superimposed. Dorsum of epinotum dull, finely reticulate and coriaceous, the declivity dull and transversely striate. Abdomen moderately shining, microscopically punctured. Pygidial area triangular, rounded at the apex, finely marginate at the sides, very finely reticulate-punctate and dull, with a few larger punctures here and there. Anterior margin of clypeus convex. Eyes less convergent above than in *syriacus*, the interocular distance on the vertex being equal to a little more than twice the length of the second joint of the flagellum. Calcaria and spines on the legs whitish. The comb of the anterior tarsus composed of long pale yellowish cilia, of which there are seven on the basal joint; the latter is asymmetrical, the apex being produced outwardly. Wings hyaline, the veins yellow or brownish yellow; venation similar to that of *syriacus*.

♂, 8–10 mm. Lower half of face and the clypeus covered with a whitish pilosity, the face above the antennal sockets with exerted brown pilosity. Interocular distance on the vertex much greater than in *syriacus*, being equal to twice the length of the second joint of the flagellum, or even a little more. Basal joint of fore tarsus with five thin spines. Seventh tergite broadly rounded at the apex, the eighth sternite arcuately emarginate, the lateral angles dentiform. Otherwise like the ♀. It bears a deceptive resemblance to the ♂ of *syriacus*, but can be distinguished from that species by the finer sculpture of the thorax, the absence of the dense pilosity on the first tergite, the brown hairs of the upper face, and by the anterior metatarsus, which has five spines instead of the seven in *syriacus*.

Sawmills and Plumtree, S.R. October to December. Type in R.M. coll. (R.M. and T.M. colls.)

T. sericeus Smith (Fig. 27 a and b). *Cat. Hymen. Brit. Mus.* iv, 285, ♀. 1856. (*fluctuatus*) Gerstaecker, *Monatsb. Akad. Wiss. Berlin*, p. 510, ♀. 1857.

♀, 10–12 mm. Black, middle third of mandibles ferruginous, eyes bice-green, tarsi, tibiae, apical fourth of the front femora, apical third of the middle, and apical half or more of the hind femora, pale ferruginous (pale burnt sienna).

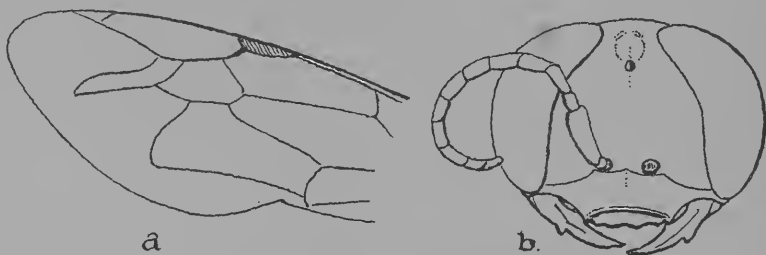


Fig. 27. a. wing, b. head of *Tachysphex sericeus* Smith, ♀.

Wings hyaline, veins and stigma brown, tegulae flavous. Clypeus and lower half of the face with a thin silvery pubescence, the vertex almost bare. Thorax (excepting the posterior two-thirds of the mesonotum and scutellum which are bare) covered with a sparse greyish white pilosity, fairly long, densest on the sides of the thorax and epinotum, but nowhere hiding the sculpture. Abdomen with a pruinose pubescence, the apical margins with fasciae of silvery pubescence.

Head dull, closely and evenly punctured, coriaceous between the punctures. Mesonotum, scutellum and metanotum nitidulous, closely and evenly punctured, the punctures on the mesonotum larger than on the scutellum. Mesopleurae dull, closely and finely punctured. Epinotum dull, the dorsum reticulate-rugose, the rugae emphasised longitudinally near the base, the sides and declivity transversely striate and punctured between the striae. Abdomen nitidulous, the apical third or so of each segment moderately depressed, the depressed area shorter at the sides than in the middle, so that its hind margin is more or less sinuate. First sternite carinate in the middle, the carina not extending to the base, the rest of the sternites shining and microscopically alutaceous, excepting the second which is dull, closely and very finely punctulate at the sides and at the base. At the base of the second sternite there is a small, shining, round and tumid area, sharply punctured on each side; this structure is only visible when the segments are extended, as otherwise the first sternite overlaps it. The fourth and fifth sternites with a few large punctures, the sixth closely punctured at the sides. The pygidial area smooth, very sparsely and finely punctured, shining, triangular, rounded at the apex and marginate at the sides.

Median area of clypeus with a deep premarginal transverse impressed line, the anterior margin almost straight and ending on each side in a stout blunt tooth. Interocular distance on the vertex equal to the combined length of the first and second joints of the flagellum. The second joint is about twice as long as the first. The ocellar area is divided by a longitudinal impression into two parts. The dorsum of the epinotum is twice as wide behind as long in the middle, its junction with the vertical declivity rectangular. Posterior and middle tibiae and tarsi feebly spinose. The comb of the anterior tarsus composed of long yellowish cilia.

The second abscissa of the radius is clearly longer than the first, and about one-fourth longer than the third, the fourth equal to the first and second combined.

♂, 8-9.5 mm. Clypeus and face covered with a dense and dark golden pubescence. Eyes greenish yellow in life, yellow when dead. Pilosity on the thorax less abundant, otherwise like the ♀ in colour, pilosity and pubescence. The puncturation of the mesonotum is a little finer than in the ♀, as is also the sculpture of the epinotum. The interocular distance on the vertex is equal to the length of the second joint of the flagellum. Second joint of the flagellum three-fourths longer than the first. Apical margins of the fifth to seventh tergites testaceous, the last shallowly and closely punctured, triangular, widely rounded at the apex. Anterior tarsi without a comb. Anterior femora distinctly emarginate near the base. Otherwise like the ♀.

Bulawayo. June to July.

A variety from Malvern, Natal, in the Durban Museum collection, has the median area of the clypeus very narrowly excised in the middle and furnished with three short teeth on each side. The dorsum of the epinotum is also somewhat more strongly sculptured; otherwise it does not differ from the typical form.

R.M. and T.M. colls.

T. vulneratus Turner. *Ann. Mag. N.H.* XIX, No. 112, p. 325, ♀, ♂. 1917.

♀, 7.5-11 mm. Black, mandibles except at the apex, the anterior tarsi and tibiae, the middle and hind tibiae below, the apices of all the femora, the fifth, sixth and apical margin of the fourth abdominal segments ferruginous; the middle and hind tarsi dark castaneous; the tegulae dirty yellow. Lower

half of face with short silvery pubescence. Sides of epinotum with short, exserted and whitish hairs. First three tergites with pruinose pubescence, inconspicuous, but denser on the apical margins, where it forms short, transverse fasciae.

Wings hyaline, tinged with ochreous, veins brown.

Head fairly dull, finely and closely punctured. Mesonotum and scutellum shining, closely and evenly punctured, the spaces between not larger than the punctures themselves, except on the middle of the scutellum. Metanotum dull and shagreened. Dorsum of epinotum dull, strongly, evenly and longitudinally striate, punctulate between the striae, the sides finely and obliquely, the declivity transversely, striate. Median area of clypeus impressed behind the anterior margin, which has two blunt teeth on each side. Interocular distance on the vertex a little shorter than the second joint of the flagellum. Abdomen nitidulous, the apical margins of the first three tergites impressed and piceous. Pygidial area triangular, as wide behind as long, shining and sparsely punctured, the apex rounded. Spines of the legs reddish yellow, the comb of the front tarsus composed of long yellowish cilia. The first three abscissae of the radius subequal.

"♂, 8-9 mm. Seventh dorsal segment broadly rounded at the apex; eighth ventral segment shallowly emarginate, the angles produced into distinct teeth."

N.E. Rhodesia, July and August (Neave); Hillside, Bulawayo, October and November. Allied to *sericeus* Smith.

T. ambiguus n.sp. (Fig. 28).

♀, 10.5-11.5 mm. Larger than, but very much like *filicornis* Kohl, from which it differs as follows:

Last two joints of all the tarsi fusco-ferruginous, the spines on the tarsi blackish brown, those on the middle and hind tibiae whitish and stouter than in *filicornis*, the comb of the anterior tarsus pale brown. Wings entirely hyaline. The head more coarsely punctured, especially between the anterior ocellus and the antennal sockets, where the punctures are more scattered, the spaces between them shining. Mesonotum, scutellum and metanotum less closely punctured than in *filicornis*, the spaces between the punctures shining, the scutellum very sparsely punctured. The rugae on the dorsum of the epinotum are relatively much stronger, wider apart, longitudinal, and connected by transverse rugae only on the posterior half.

Mesopleurae moderately shining, less closely punctured than the mesonotum (more closely in *filicornis*); mesosternum shining, closely and strongly punctured. Pygidial area nitidulous, less elongate than in *filicornis*, shallowly and very sparsely punctulate. Median area of clypeus somewhat produced, its anterior margin depressed, convex and festooned with five shallow indentations, with a blunt tooth on each side. The head is narrower than in *filicornis*, only one-seventh wider than long. The distance between the eyes on the vertex is equal to the combined length of the first and second joints of the flagellum, as in *filicornis*, but the eyes are more convergent above than in that species since the joints of the flagellum are relatively shorter. The second joint is hardly more than twice as long as the first. The fourth abscissa of the radius is not quite twice as long as the third. Otherwise like *filicornis*.

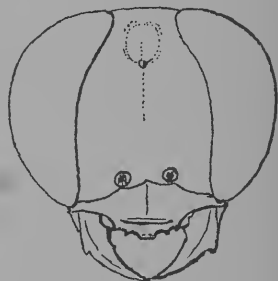


Fig. 28. *Tachysphex ambiguus*, ♀.

♂, 8 mm. Colour, sculpture and pubescence as in the ♀. The median area of the clypeus is narrower than in the ♀, with the anterior margin shallowly concave. The interocular distance on the vertex is nearly equal to the combined length of the first three joints of the flagellum. The first joint of the latter is half as long as the second, the second and third subequal. Pygidium trapezoidal, finely punctured, the apical sternite emarginate. Otherwise like the ♀.

Bulawayo. June. Type in the R.M. coll.

A larger and much more robust insect than *filicornis*.

T. crassipes n.sp. (Fig. 29).

♀, 11 mm. A stout species, the thorax wide and compact, the legs short, the femora thick. Black, the last two joints of all the tarsi ferruginous. Sides and lower half of the face and the clypeus with a thin silvery pubescence. Back of the head and thorax with a fine, fairly long, whitish pilosity, very scanty on the mesonotum and scutellum, decumbent on the sternum; sides of epinotum glabrous. Abdomen and legs with thin yellowish grey pubescence, the abdomen without transverse fasciae. Head, ventral surface of the abdomen and the thorax, excepting the dorsum of the epinotum, moderately shining, the dorsal surface of the abdomen nitidulous. Clypeus punctured, finely and closely so at the sides, more coarsely in the middle, the anterior margin of the median area smooth. Face evenly and sharply punctured, the punctures fairly widely spaced. Pronotum and legs very finely and closely punctured. Mesonotum, scutellum and metanotum sparsely but sharply punctured, the punctures small, the spaces between them averaging the width of five or six punctures. Dorsum of epinotum dull, longitudinally and finely rugose; the sides longitudinally striate, the declivity transversely so. Abdomen very finely punctured above, the apical margins impunctate, the fifth more strongly than the first four, the pygidial area triangular, half as long again as wide at the base, marginate at the sides, narrowly truncate at the apex, shining, sparsely and coarsely punctured. Ventral surface of abdomen finely but distinctly punctured, the punctures increasing in size gradually towards the apex. Median area of clypeus tumid, its anterior margin transverse and depressed, with a shallow excision on each side. Antennae slender and fairly long, the second and third joints of the flagellum subequal, the second two and a half times longer than the first; all the joints, except the first, at least twice as long as wide. Interocular distance on the vertex equal to the combined length of the first and second joints of the flagellum. Mesonotum two-thirds wider than long, hardly longer than the epinotum. Spines and tarsal comb ferruginous, the comb composed of thin and long cilia. Inner calcar of hind tibia almost as long as the basal joint of the tarsus. Wings hyaline, faintly tinged with brown, veins brown. First abscissa of the radius longer than the second, the second and third and the space between the recurrent veins on the cubitus all of equal length.

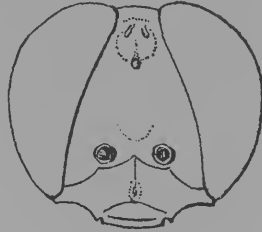


Fig. 29. *Tachysphex crassipes*, ♀.

♂, 8-9 mm. Median area of clypeus produced into a short lobe, the anterior margin of which is straight. The interocular distance on the vertex is equal to a little more than the combined length of the first two joints of the flagellum. The mesonotum is more sparingly punctured than in the ♀. The pygidium is broadly rounded and fairly closely punctured, the apical sternite emarginate, with the lateral angles dentiform. Otherwise like the ♀.

Matopos and Sawmills, S.R. July. Type in the R.M. coll.

T. Barkeri n.sp.

♀, 11 mm. Black, the apical half of the mandibles castaneous brown. Wings fusco-hyaline, tinged with ochreous, strongly so over the proximal half. Tegulae testaceous. Clypeus and face with a very short and dull silvery pubescence; the epinotum with a very short, erect, greyish pubescence, very inconspicuous; the rest of the body and the legs with greyish silvery decumbent pubescence, longer on the apical margins of the first three tergites, where it forms fairly distinct transverse fasciae. Tarsal comb ochreous; the spines of the middle and hind legs deep fulvous, the calcaria of the same colour.

Dull; the head, pro-mesonotum, scutellum and metanotum, pleurae and sternum very finely and evenly punctured, the punctures becoming progressively smaller from the head to the metanotum, where they are microscopic. The anterior margin of the clypeus with a few larger punctures. Dorsum of epinotum microscopically reticulate-punctate, reinforced with a superficial reticulate rugosity; the declivity transversely striate, the sides closely and finely striolate lengthwise. Abdomen dull, the third to fifth sternites with a row of large punctures near the apical margins; the sixth sternite closely punctured; pygidial area elongate-triangular, the apex emarginate, the sides sharply marginate, dull, closely punctured, the punctures smaller in the middle than at the sides.

Anterior margin of clypeus convex. Antennae short and stout, not much longer than the head is wide, not reaching back to the middle of the mesonotum, the second joint of the flagellum very little longer than wide at the apex, about half as long again as the first, the remaining joints not more than half as long again as wide.

The interocular distance on the vertex is equal to the combined length of the second and third joints of the flagellum. The angular impression behind the ocellar area very deep. In the proportions of the thorax this species resembles *crassipes*. Cilia of the tarsal comb not very long, the basal joint with eight or nine cilia. First and second abscissae of the radius, and the spaces between the recurrent veins on the cubitus, subequal; the third abscissa about half as long again as the second.

Umbogotwini, Natal (C. N. Barker); Bulwer, Natal (W. J. Hay).

Type in the Durban Museum.

Not unlike *crassipes*, from which it differs, *inter alia*, by the finer sculpture, the dull mesonotum, the abdominal fasciae and the colour of the wings and of the spines on the legs.

T. karroensis n.sp.

♀, 8 mm. Black, mandibles except at the apex, tibiae, tarsi, apical fourth of the front and middle femora, and the apical half or more of the hind femora, yellowish red or bright ferruginous. Tegulae flavous. The pygidium and fifth tergite ferruginous; wings hyaline, tinged faintly with yellow, veins brown. Lower part of face with greyish white pubescence, the sides of the thorax with similar pubescence but very sparse, ventral surface of abdomen with a few long brown hairs. The first three tergites with inconspicuous apical fasciae of whitish pubescence; otherwise glabrous. Median area of clypeus shining, with a few large punctures, impressed behind the anterior margin, which is feebly convex and ends on each side in two small blunt teeth. The rest of the head, mesopleurae and metanotum dull, very finely and closely punctured. Mesonotum and scutellum dull, closely punctured, the punctures larger than those of the vertex and not smaller than the spaces between them. Epinotum dull, the dorsum closely and finely rugose longitudinally, also somewhat reticulate towards the apex, the sides very finely and longitudinally striate,

the declivity transversely and less finely striate. Abdomen nitidulous, microscopically punctulate above, very shining and almost impunctate below; the pygidial area shining, feebly punctured, the apex broadly truncate, as long as wide at the base.

Interocular distance on the vertex equal to the combined length of the first two joints of the flagellum; the latter is not long, and the second joint is only a little more than twice the length of the first. Epinotum broad, twice as wide at the base as long in the middle. Spines of the legs ferruginous; the inner calcar of the hind tibia two-thirds as long as the basal joint of the tarsus. The comb of the anterior tarsi composed of numerous long yellowish cilia. First abscissa of the radius a trifle longer than the second, the latter and the third subequal.

♂, 7 mm. Colour of legs paler than in the ♀. Eyes yellow. Face clothed with golden pubescence, the sides of the thorax with a denser pubescence than in the ♀. Apical margins of the abdominal segments testaceous. Median area of clypeus finely punctured and dull, its anterior margin angular at the corners but without the small teeth which are present in the ♀. The interocular distance on the vertex is equal to the combined length of the first two joints of the flagellum. Pygidium rounded at the apex, eighth sternite emarginate. The first and third abscissae of the radius of equal length, the second a little longer than either of them.

Willowmore, C.P. (Brauns). December. Type in the R.M. coll.

Not unlike one of the smaller members of the *Panzeri* group, especially in the ♂, but differing by the structure of the clypeus and coarser sculpture of the thorax. In the British Museum collection there is a ♀ specimen, also from Willowmore (Brauns 1900, No. 92) in which the pygidium is black.

T. filicornis Kohl (Fig. 30, *a, b, c*). *Deutsch. Ent. Zeitschr.* xxvii, 169. 1883.

♀, 7.5–9 mm. Black, upper part of eyes blackish green in life. Wings hyaline, veins black, the discoidal-cubital area often faintly suffused with ochreous. Clypeus, lower half of face, temples and pronotum with silvery pubescence. Thorax with a fine, short, exerted and whitish pilosity, scanty above, more abundant and longer on the sides and on the declivity of the epinotum; legs and abdomen with a fine, decumbent, greyish silvery pubescence, longer and more dense on the apical margins of the tergites, where it forms narrow transverse fasciae.

Dull, the clypeus very delicately, the rest of the head closely punctate and coriaceous, the punctures becoming larger towards the vertex. Mesonotum, scutellum and metanotum closely and evenly punctured, the punctures smallest on the metanotum. Dorsum of the epinotum reticulate-rugose, slightly shining between the rugae, the latter emphasised longitudinally; sides and declivity transversely striate, the declivity also punctured, its median sulcus deep. Dorsal segments of the abdomen dull, microscopically punctured, the ventral segments shining, the apical segment slightly compressed laterally, the

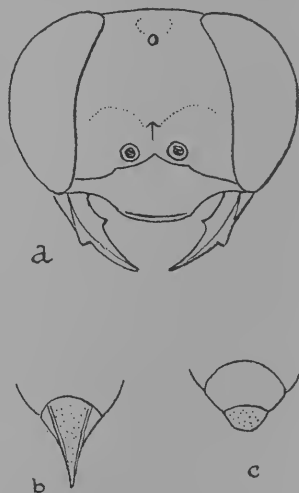


Fig. 30. *Tachysphex filicornis*.
a. head of ♀; *b.* pygidium of ♀; *c.* pygidium of ♂.

pygidial area shining, with a few very fine punctures, lanceolate, two and a quarter times longer than wide at the base, acute at the apex, marginate at the sides.

Head in front nearly one-third wider than long. Anterior margin of the clypeus convex. Antennae distinctly long; the second joint of the flagellum from two and a half to two and three quarter times longer than the first, the third to the seventh quite three times longer than wide, the remaining joints a little shorter. The interocular distance on the vertex is nearly equal to the combined length of the first and second joints of the flagellum. Dorsum of epinotum fairly long, only two-thirds wider at the base than long. Tibiae and tarsi of middle and hind legs with a few short and whitish spines, the anterior tarsi with a comb of long and white cilia. First and third abscissae of the radius subequal, the second two-thirds longer than the first; the space on the cubitus between the two recurrent veins equal to the third abscissa of the radius.

♂, 5.3-6.5 mm. Head more coarsely punctured than in the ♀, especially behind the ocelli, the spaces between the punctures shining. The punctures on the mesonotum are also relatively larger and wider apart, the spaces between somewhat shining. The pilosity on the thorax shorter and less dense. The abdomen more distinctly punctured than in the ♀. Pygidium nitidulous, sparsely punctured, widely rounded at the apex. The antennal joints much shorter than in the ♀. The second joint of the flagellum is hardly one-fourth longer than the first, the third about one and a half times longer than the first, the third to seventh joints barely twice as long as wide. The interocular distance on the vertex is equal to the combined length of the first three joints of the flagellum. Anterior tarsi with only a few short cilia. Otherwise like the ♀.

Bulawayo, Pretoria, Durban and Willowmore. Nesting in loose sand.

The commonest and most abundant species of the genus. The ♂♂ at sunset dig short burrows in the sand in which to shelter overnight. The subspecies *excerptus* Turner (*Ann. Mag. N.H.* XIX, No. 112, p. 321, 1917) can hardly be maintained, as it is based merely on the striae of the epinotal dorsum being divergent instead of parallel.

T. minutulus n.sp.

♀, 6 mm. Black, the last four joints of the tarsi brown, the mandibles, except at the base and the apex of the pygidium, reddish brown. Shining, except the clypeus, face and epinotum. The lower half of the face with short silvery pubescence. Sides of thorax and posterior margins of the sides of the epinotum with a few coarse greyish silvery hairs, the apical margins of the tergites testaceous, the first four with transverse fasciae of silvery pubescence interrupted in the middle. Clypeus closely punctured, the median area impressed behind the anterior margin, the latter transverse. Face dull, closely and coriaceously punctured, its lower third excavated, the brow of the excavation slightly tumid and shining. Ocellar area, vertex and temples sharply, finely and not very closely punctured. The transverse impression behind the ocellar area rather deep. Mesonotum fairly strongly punctured, the spaces between the punctures hardly larger than the punctures themselves. The scutellum more finely and the metanotum very finely punctured. Dorsum of epinotum dull, reticulate-rugose, the rugae near the base larger and longitudinal; sides and declivity transversely and closely striate. Mesopleurae shining, finely and sparsely punctured. Abdomen microscopically punctulate. Pygidial area elongate triangular, acute at the apex, marginate at the sides and sparsely punctured.

Interocular distance on the vertex equal to very little more than the combined length of the first two joints of the flagellum. The latter is fairly short, the first joint two-thirds as long as the second. The dorsum of the epinotum is barely wider at the base than at the apex, nearly twice as wide at

the base as long. Wings hyaline, faintly tinged with ochreous, the first abscissa of the radius as long as the third, a little shorter than the second.

♂, 5 mm. Sculpture a little finer than in the ♀. The interocular distance on the vertex is equal to the combined length of the first three joints of the flagellum. The latter short and thick, all the joints, except the second, only a very little longer than wide, the second about twice as long as wide at the apex. The transverse impression behind the ocellar area deeper and shorter than in the ♀, not reaching the margins of the eyes. All the abdominal segments except the last two have apical fasciae of silvery pubescence at the sides. Pygidium broadly truncate at the apex. Otherwise like the ♀.

Matopos and Bulawayo, S.R. October to January. Type in the R.M. coll.

Not unlike a small *filicornis*, but with very different sculpture on the head and thorax. (T.M. and R.M. colls.)

T. Oberon n.sp.

♀, 8.5 mm. Black, spines of the legs ochreous, calcaria black. Wings strongly tinged with ochreous over the basal two-thirds, merging into pale fuscous towards the apex.

Pubescence of temples, face and clypeus silvery. Thorax and abdomen with a very short, inconspicuous and greyish pubescence, not forming distinct apical fasciae on the tergites. The greyish pubescence on the epinotum longer and outstanding, very sparse on the dorsum. Head and thorax dull, closely, finely and shallowly punctured, a little less closely on the vertex and on the median area of the clypeus. The latter has a row of large punctures behind the premarginal impression. Dorsum of epinotum very finely reticulate-punctate, the sides delicately and obliquely striolate, the declivity transversely striate. Abdomen dull, microscopically rugulose, the pygidium shining, sparsely punctured below and on the pygidial area above, the latter elongate triangular, narrowly truncate at the apex, about half as long again as wide at the base. Median area of clypeus moderately gibbous, its anterior margin feebly convex, with two minute teeth on each side. Antennae short and stout; the scape less than twice as long as wide; the first joint of the flagellum as long as wide, the second shorter than the third and barely one-third longer than the first. Interocular distance on the vertex greater than the combined length of the first two joints of the flagellum, but equal to that of the second and third.

Thorax wide, the mesonotum twice as wide in front as long, one and a half times as long as the epinotum. The scutellum large, half as long as the mesonotum. The epinotum twice as wide at the base as long. Legs short and stout, especially the tarsi. The apical joint of the hind tarsi hardly longer than wide at the apex, not longer than the second, but distinctly longer than its claws. The inner calcar of the hind tibia distinctly shorter than the basal joint of the tarsus. The comb of the anterior tarsi composed of long yellowish cilia, of which there are seven or eight on the basal joint. Veins on the wings brownish yellow, the first abscissa of the radius two-thirds longer than the second, one-third longer than the third.

Sawmills, S.R. December. 1 ♀. Type in the R.M. coll.

A distinct species, easily recognised by its pale ochreous wings and the short first three joints of the antennae.

T. harpax n.sp. (Fig. 31).

♀, 8 mm. Very similar to *Oberon* in build, colour, pubescence and sculpture of the head, thorax (except the epinotum) and abdomen. It differs from it as follows:

The basal and second joint of all the tarsi dark brown, the remaining joints flavo-ferruginous. The spines on the legs pale ochreous, the claws flavo-ferruginous with black apices, the posterior calcaria blackish brown. The apical margins of the tergites fusco-testaceous, the apex of the pygidium dark reddish brown.

Median area of the clypeus nitidulous, with a row of large punctures behind the feeble premarginal impression, the anterior margin convex and without the lateral teeth present in *Oberon*. The scape as short as in that species, but the flagellum is more slender, the first joint a trifle longer than wide, the second twice as long as the first, and a little longer than the third. The interocular distance on the vertex is equal to the length of the second joint of the flagellum plus half the first. Dorsum of epinotum dull, closely and finely rugose, the rugae radiating fan-wise from the base, the sides nitidulous and more finely striolate than in *Oberon*, almost aciculate; the declivity oblique, transversely striate. The dorsum of the epinotum is very short, being barely longer than the scutellum, or half as long as the mesonotum, hardly narrowed posteriorly, and about two and a quarter times wider at the base than long. Pygidium shining, the pygidial area sharply marginate, more strongly punctured than in *Oberon*. The sternites nitidulous and impunctate. The inner calcar of the hind tibia is long, fully one-third longer than the basal joint of the tarsus. The last joints of all the tarsi and their claws are unusually long; the claws are asymmetrical, the outer one of the front legs and the inner one of the middle and hind legs being longer than its fellow; the longer claw almost as long as the apical tarsal joint, the latter barely shorter than the second joint. The comb of the anterior tarsi longer and finer than in *Oberon*, the basal joint having about ten cilia on its outer margin. Wings hyaline, veins dull ochreous, the first three abscissae of the radius of about equal length.

Sawmills, S.R. 1 ♀. October. Platriver, Transvaal, 1 ♀. November (leg. R. v. Jutrzencka). Type in the R.M. coll. (R.M. and T.M. colls.)

T. bituberculatus n.sp. (Fig. 32).

♀, 9.5 mm. Very much like *Oberon*, but the wings are not tinged with ochreous, only faintly fuscous. The colour, pubescence and sculpture are the same as in that species, but the sides of the epinotum are without striolae except at the posterior margins where they meet the declivity, and the pygidial area is more finely punctured. The vertex is a little more closely punctured than in *Oberon*, and the interocular distance on the vertex is equal to the combined length of the first two joints of the flagellum. The latter short and stout like that of *Oberon*. The chief distinction between the two species lies in the presence in this species of two wedge-shaped tubercles, separated by a deep and narrow groove, situated just above the antennal sockets. In *Oberon* there are two slight swellings in the same position, but they are merely feeble bosses, not angular and prismatic in shape as in this species.

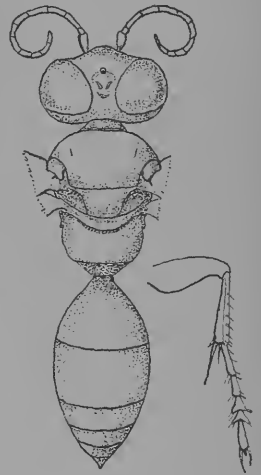


Fig. 31. *Tachysphex harpax*, ♀.



Fig. 32. *Tachysphex bituberculatus*, ♀; oblique lateral view of the head.

Legs short and stout; tarsal comb as in *Oberon*.

Bulawayo, January; Khami Ruins, S.R. December. Type in R.M. coll.

T. Titania n.sp.

♀, 7.5 mm. Not unlike *flicornis* Kohl, but stouter and much more strongly sculptured. Black, face, clypeus and temples covered with a silvery and not dense pubescence. Thorax with sparse, erect and whitish pubescence, more abundant on the sides of the epinotum. Abdomen with a very thin, short and whitish pubescence, hardly forming distinct transverse fasciae on the apical margins of the first three segments.

Head strongly and closely punctured, dull, the occiput more distantly punctured and slightly shining between the punctures. Mesonotum, mesopleurae, mesosternum and scutellum nitidulous, strongly and deeply punctured, the punctures more scattered on the scutellum than on the mesonotum. Sides of epinotum obliquely, the declivity transversely, strongly striate; the dorsum of the epinotum strongly and longitudinally rugoso-striate, shining between the striae, the apical margin distinctly convex. First and second tergites moderately shining, closely and sharply punctured, their apical margins more finely so. The third to fifth tergites very finely and closely punctured over the basal half, the apical half shining and almost impunctate. The pygidium smooth, shining and impunctate, elongate triangular, but not so elongate as in *flicornis*. Sternites shining and impunctate. Median area of the clypeus tumid, shining, wider than long, impressed behind the anterior margin, which is obtusely angular in the middle. Antennae distinctly shorter and thicker than in *flicornis*. The second joint of the flagellum is twice as long as the first (from two and a half to two and three-quarter times in *flicornis*) and barely longer than the third (at least one-quarter longer in *flicornis*). The interocular distance on the vertex is a trifle greater than the combined length of the first two joints of the flagellum. The epinotum is a little shorter than the mesonotum, relatively shorter than in *flicornis*; the apex of the dorsum, above the brow of the declivity, is sharply marginate, and the sides, seen from above, are distinctly convex. Abdomen wider at the base than in *flicornis*. Wings and venation as in that species. Spines on the legs blackish; the basal joint of the front tarsus with distantly spaced and long cilia.

♂, 7.3 mm. Considerably larger and more robust than the ♂ of *flicornis*. Colour, pubescence and sculpture as in the ♀, but the abdominal segments are more strongly punctured. The pubescent fasciae on the first three tergites somewhat more distinct. The brow of the epinotum not marginate, merely feebly angular in the middle, the rugae on the dorsum coarser than in the ♀. The anterior margin of the median area of the clypeus less obtusely angular in the middle. The interocular distance on the vertex is almost equal to the length of the first four joints of the flagellum. The second joint is relatively longer than in *flicornis* ♂, being nearly twice as long as the first and about as long as the third. Apex of last tergite widely truncate. Anterior tarsus without a distinct comb. Otherwise like the ♀.

Bulawayo, 1 ♂, 1 ♀, taken together at the entrance to a burrow, April; Matopos, S.R. 1 ♂. The latter specimen is a little less coarsely rugose on the dorsum of the epinotum than in the type of the ♂. Types in the R.M. coll.

T. prosopigastroides Bischoff. *Arch. f. Naturgesch.* p. 65, ♀. 1913.

♀, 11–11.5 mm. Black, first two abdominal segments ferruginous, third to fifth with piceous apical margins, tegulae brownish yellow, tarsi dark brownish red, the metatarsi yet darker, mandibles castaneous, black at the base and apex. Lower half of the face with a very sparse, short and greyish

pubescence which does not hide the sculpture in the least, the clypeus almost glabrous. Thorax with a short, outstanding, sparse and greyish white pilosity, longer and denser on the outer margins of the epinotal declivity. Abdomen with an exceedingly fine whitish pubescence, somewhat longer on the apical margins, where it forms inconspicuous fasciae widely interrupted in the middle.

Head, pro-mesothorax and metanotum closely punctured, fairly coarsely on the head, finely on the pronotum and metanotum, the mesonotum coarsely punctured and also reticulate posteriorly, the scutellum more coarsely punctured and slightly shining, the rest of the thorax and the head dull. Dorsum of epinotum longitudinally reticulate-rugose, the sides rugoso-striate, the declivity coarsely coriaceous and rugose. Abdomen slightly shining, the first three segments microscopically punctured, the fourth and fifth more strongly but still finely punctured, the pygidial area smooth and shining, triangular, barely longer than wide at the base, the ventral surface of the abdomen much less closely punctured than the dorsal.

Median area of the clypeus with the anterior margin convex, shining, depressed and feebly sinuate, or, as in the other specimen before me, deeply festooned and almost trituberculate in the middle. The interocular distance on the vertex is equal to the combined length of the first and second joints of the flagellum. The second joint of the latter is two and three-quarter times longer than the first, hardly longer than the third. On the vertex the eyes almost reach the occipital margin. Temples shining, sparsely and finely punctured. Epinotum very little shorter than the mesonotum, the dorsum not much wider at the base than across the apex, one and three-quarter times wider at the base than long in the middle, the declivity vertical, its brow finely marginate.

Wings hyaline, the veins reddish ochreous, the stigma brown; second abscissa of the radius a little longer than the third, and about as long as the first. Spines and tarsal comb dark brown, the comb composed of long, stiff and curved hairs, of which there are six longer ones on the outer margin of the basal joint.

Bulawayo, Sawmills and Matopos, S.R. April to May. The type is in the Berlin Museum.

Apparently a very rare species as only three have been found within the last ten years. I cannot understand why Bischoff should have had any doubts as to the generic position of this species. It is a typical *Tachysphex*, in spite of the coarse tarsal comb, small claws and pulvilli and slender legs, characters which, moreover, are not wanting singly or in combination in several other species of the genus (R.M. coll.).

T. sipapomae n.sp. (Fig. 33).

♂, 8.5 mm. Head and thorax black, first three and the greater part of the fourth abdominal segments bright brick-red, the remaining segments black with widely flavo-testaceous apical margins. Legs pale ferruginous, the coxae, trochanters, basal two-thirds of the fore and middle femora, and basal fourth more or less of the hind femora, black. Tegulae flavo-ferruginous, mandibles brownish yellow in the middle.

Clypeus and face with a rather coarse and golden pubescence. The back of the head, dorsum and sides of the thorax with a short, whitish and somewhat woolly pilosity, sparse except at the sides. Legs and apical margins of the abdominal segments with a very fine whitish pubescence, very sparse on the abdomen and not forming transverse apical fasciae.

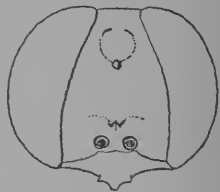


Fig. 33. *Tachysphex sipapomae*, ♂.

Clypeus, face and vertex dull, closely and sharply punctured, the temples and occiput smooth and shining, very sparsely and finely punctured. Promesonotum and mesopleurae dull, strongly and closely punctured, the punctures wide and shallow, wider than the spaces between them; mesosternum nitidulous, just as coarsely but not so closely punctured. Scutellum shining, more finely punctured than the mesonotum. Metanotum coriaceous and dull. Dorsum of epinotum coarsely and longitudinally reticulate-rugose, the sides longitudinally striate, the declivity reticulate-punctate, the whole epinotum dull. Abdomen shining, microscopically punctured, except the basal halves of the fourth and following tergites which are more strongly punctured.

Mandibles deeply and rather abruptly excised on the external margin. Clypeus produced in the middle into a narrow and short lobe which bears a blunt tooth in the middle and a smaller acute one on each side. The eyes reach the occipital margin above. The interocular distance on the vertex is equal to the combined length of the first two joints of the flagellum. All the joints of the flagellum, excepting the first, are longer than wide, the second two and a third times longer than the first, and slightly longer than the third. Mesonotum as long as the metanotum and epinotum taken together. The dorsum of the epinotum twice as wide as long, parallel-sided, marginate posteriorly by a sharp transverse ridge, the declivity vertical. Pygidium trapezoidal, its apex transverse; eighth sternite emarginate, the lateral angles produced into short teeth. Spines of the legs ferruginous, the anterior tarsus without a distinct comb. The anterior femora widely and shallowly excised near the base, the proximal side of the excision produced into a sharp and short tooth. Wings hyaline, the veins ferruginous. First and second abscissae of the radius subequal, each slightly shorter than the third, and barely longer than the space between the recurrent veins on the cubitus.

Sawmills (native name, *Sipapoma*), S.R. August; Bulawayo and Matopos, S.R. April to July.

A distinct species, sharply characterised by the coarse sculpture of the thorax and by the shape of the clypeus. It may be the ♂ of *prosopigastroides*.

T. Turneri Brauns (Fig. 34). nom. in litt.

♀, 8.5 mm. Black, the mandibles in the middle, the apical half of the first and the whole of the second abdominal segment, the tibiae, tarsi and apices of all the femora, ferruginous. Tegulae pale ferruginous. Clypeus and lower half of the face with dense silvery pubescence, the rest of the head, the thorax and base of the first tergite with a thin whitish pilosity. Tergites and first two sternites with a very fine and sparse pubescence, without apical fasciae.

Head closely and deeply punctured, the punctures small on the clypeus but becoming gradually larger and less crowded towards the vertex. Thorax deeply and strongly punctured, the punctures on the mesonotum and scutellum as large and as far apart as those on the vertex, closer and smaller on the pronotum and metanotum, fairly close but smaller on the mesopleurae and mesosterna than on the mesonotum. On the vertex, mesonotum and scutellum the spaces between the punctures are smooth and shining. Back of the head shining, sparingly and sharply punctured. Epinotum dull, strongly reticulate-punctate, the sides also slightly striate near their bases. Abdomen, excepting the smooth apical margins, moderately shining, strongly

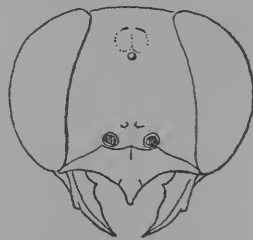


Fig. 34. *Tachysphex Turneri*, ♀.

and deeply punctured, the punctures becoming smaller on the fourth and fifth tergites, the pygidial area smooth, shining and almost impunctate, elongate-triangular, subacute at the apex, hardly marginate at the sides, about twice as long as wide at the base. Sternites less deeply punctured but more shining than the tergites. Coxae, trochanters and femora finely punctured.

Clypeus produced in the middle into a sharp triangular tooth as long as it is wide at the base. Eyes not strongly convergent above, the interocular distance on the vertex being fully equal to the combined length of the first three joints of the flagellum. Dorsum of the epinotum two and a third times wider at the base than long in the middle, noticeably convex transversely and moderately so lengthwise, its junction with the declivity widely rounded (almost as much as in the genus *Tachytes*). The spines on the legs short, the anterior metatarsus without a comb, bearing about three or four short spines. Inner calcar of hind tibia about half as long as the basal joint of the tarsus. Wings fusco-hyaline, veins brown. The first and third abscissae of the radius subequal, the second slightly longer and about half as long again as the space on the cubitus between the recurrent veins.

♂, 7 mm. First abdominal segment with a transverse arcuate band of dark, ferruginous colour (darker than in the ♀), across the apical margin, narrow at the sides but widening to about one-third of the segment in the middle. Second segment dark ferruginous, the apical third piceous red (sometimes the whole abdomen is black, *teste* Brauns). Clypeus as in the ♀. The interocular distance on the vertex is equal to the combined length of the first four joints of the flagellum. Second sternite with a deep and shining transverse impression at the base. Eighth ventral plate shallowly emarginate. Anterior femora shallowly excised, the proximal end of the excision produced into a short tooth. Wings paler than in the ♀. In the only example of this sex before me, the second abscissa of the radius is about one-fourth longer than either the first or third, and quite twice as long as the space between the recurrent veins on the cubitus. Otherwise like the ♀.

Willowmore, C.P. (Brauns). December. Type in the R.M. coll.

The description of this species was entrusted to me by Dr Brauns, who had already given it in manuscript the name which it now bears, in honour of Mr Rowland E. Turner. According to Dr Brauns's observations, this species differs in its habits from most of the genus. Instead of making burrows in the usual way in the ground, it nests in hollow stems of Aloe, Datura, etc., lying on the ground; the partitions between the cells being formed of earth and little pebbles.

T. asinus n.sp.

♀, 13 mm. Head and thorax black, legs and first four segments of the abdomen ferruginous (pale burnt sienna), the basal third of the first segment black, the apical margin of the fourth fusco-ferruginous, the fifth and sixth brownish black. The coxae, trochanters and a streak on the inner side of all the femora at the base, black. Pronotal tubercles and tegulae ferruginous. Wings deeply flavo-hyaline, the apical third or so fusco-flavous. Clypeus and lower part of face with a short and very sparse silvery pubescence. Sides of thorax with short and inconspicuous greyish pubescence. Abdomen almost glabrous.

Clypeus sparsely and evenly punctured, nitidulous, the anterior margin convex. Head dull, closely and finely punctured. Mesonotum and scutellum nitidulous, closely but less finely punctured than the head. Mesopleurae and mesosternum dull, closely and strongly punctured. Epinotum dull, the dorsum closely reticulate-rugose, the sides finely, closely and obliquely

striate, the declivity subvertical, closely and transversely striate. Abdomen nitidulous, microscopically punctulate. Antennae short and stout, the first joint of the flagellum two-thirds as long as the second, the latter about as long as the third. The interocular distance on the vertex equal to twice the length of the second joint of the flagellum. Epinotum short, hardly longer than the scutellum and metanotum taken together, twice as wide at the base as long in the middle. Pygidial area not much longer than wide at the base, closely striato-punctate and dull, shallowly emarginate at the apex. Legs short and stout, the tarsal comb and the spines flavo-ferruginous, the inner calcar of the hind tibia a little shorter than the basal joint of the tarsus; the comb of the anterior tarsus composed of long, stiff cilia, of which there are ten or more on the basal joint.

Veins of the wings ochreous on the basal half, brown on the apical. The first three abscissae of the radius of about equal length.

Sawmills, S.R. 1 ♀. May. Type in the R.M. coll.

There is a specimen in the British Museum coll. (Ft Jameson, leg. Neave, 1910, No. 116, 1912) which is fully 2 mm. longer than the type.

T. Panzeri v.d. Lind. *Nouv. Mem. Acad. Sc. Brux.* v, 20, ♂, ♀. 1829.

This exceedingly variable and widely distributed species presents, with its allies, a complex of forms which is excruciatingly difficult to unravel. Kohl in 1884 (*Die Gattungen und Arten der Larriden*) described eight varieties which occur over an area reaching as far north as Berlin, east to west from Greece to Spain, and south to North Africa. I have not, so far, out of a very extensive series, seen any specimens from South Africa which could be identified with the type of the species, but the varieties *dolosus* and *aethiopicus* described hereunder, come very close to it. In addition to the new forms now brought forward, I have examined many others which, either owing to the absence of the other sex or to the insufficient number of examples, cannot at present be placed with any certainty under the known forms, or added to the rank of new ones. Moreover, there can be no doubt that within the greater part of the South African subregion some of the forms have several broods in the year, and it is in the highest degree likely that seasonal variations are exhibited in regard to size, pilosity and sculpture in relation to these broods. The overlapping of the different broods also makes it difficult to sex each one correctly.

Tachysphex Schönlandi and *Pentheri* Cameron are certainly varieties of *Panzeri*, but owing to the loss of the types, the exact status of Cameron's species cannot now be settled.

The var. *aethiopicus* in the ♀ sex is almost inseparable from the type of the species, and its ♂ differs from the type only by the presence of one small but constant character, *i.e.* the lamellae on the sternites.

T. Panzeri var. *aethiopicus* n.v.

♀, 8.5-10.5 mm. Head, thorax, apices of the mandibles and antennae, except the front of the scape above, black; labrum, the median area of the clypeus more or less (but rarely as far as the posterior margin), mandibles, front of scape above, and tegulae, flavo-rufous. First three abdominal segments ferruginous, the rest black, the black colour sometimes extending over the apical margin of the third tergite. Legs ferruginous, the coxae, trochanters and a small macula at the base of all the femora on the inner side, black.

Dull, only the pygidium shining. Head and thorax very closely, microscopically and coriaceously punctulate, in parts almost reticulate-punctate, the sculpture on the thorax in fresh specimens more or less obscured by the

pubescence; the punctures are not clearly resolved with a magnification of less than fifteen diameters (aplanat lens). Sides of epinotum obliquely, the declivity transversely, finely striate. The median fovea on the upper part of the declivity very deep. Abdomen dull. Pygidial area elongate triangular, acute at the apex, shining and almost impunctate, fully twice as long as wide at the base.

Face with a dense silvery pubescence, which gradually merges into pale golden above the antennae (in worn specimens all the pubescence of the face is silvery). Thorax covered with a pale golden, decumbent and short pubescence, somewhat outstanding on the dorso-lateral margins of the epinotum, and scanty on the dorsum of that segment. First four tergites covered with a very fine pale golden pubescence (fading to silvery in worn specimens), inconspicuous except on the apical margins, where it forms indistinct transverse fasciae. Median area of clypeus tumid, its anterior margin almost straight, slightly indented in the middle. The labrum prominent, its anterior margin convex. Interocular distance on the vertex equal to the length of the second joint of the flagellum. The latter fairly long and slender. Posteriorly the pronotum is not linear above, but has a distinct dorsal face which is a little longer than the first joint of the flagellum and shorter in the middle than at its lateral angles; the latter are rounded. The dorsum of the epinotum is not much shorter than the mesonotum. Spines on the legs yellowish, the inner calcar of the hind tibia ferruginous, black at the apex, three-fourths the length of the metatarsus. The comb of the anterior tarsus is composed of long cilia, of which there are six long ones together with a short one near the base on the first joint, and four on the second joint.

The venation of the wings furnishes no reliable characters to aid identification, as it is too variable, but as a rule the first three abscissae of the radius are of about equal length. The wings are hyaline, very faintly tinged with fuscous.

♂, 8-10 mm. Eyes in life bice-green. The black maculae on the femora are larger than in the ♀, extending to beyond the middle of the femur. The last four abdominal segments black, the first three red. The pubescence of the head is usually silvery, but occasionally is bright golden. The pubescent bands of the first six tergites are silvery and more conspicuous than in the ♀. The interocular distance on the vertex is equal to the combined length of the first two joints of the flagellum; the first joint of the latter is only two-thirds as long as the second. The eighth sternite is emarginate, the lateral angles dentiform; the depth and angularity of the emargination and the degree of acuteness of the teeth are very variable. At the base of both the fifth and sixth sternites there is a very narrow, vertical, transverse and membranous lamella, which extends over the median third of the width of the segment. It is difficult to decide whether they are at the base of these two segments or whether they proceed from the apical margins of the fourth and fifth sternites. This character, and the greater interocular distance on the vertex, are the only two which I can see to distinguish this form from the type of the species, and especially from the ♂ of the variety *oraniensis* Lep., a North African form. The ventral surface of the abdomen is varyingly dull or shining. The anterior tarsi have four long cilia on the outer margin of the basal joint, and two on each of the three following joints. The length of the inner calcar of the hind tibia compared with that of the metatarsus is too variable to furnish a reliable specific character. Otherwise like the ♀.

This species and *flicornis* Kohl are the two commonest species of the genus in S. Rhodesia. It has probably several broods during the year. The ♂♂ are commonly met with on flowers, and the ♀♀ are to be met with running on

the ground near the roots of the herbage looking for the grasshopper larvae which form their prey.

I am inclined to think that *T. Schoenlandi* Cameron (*Records Albany Mus.* 1, 211, ♂, 1905) is synonymous with this form, but as Cameron's type is no longer in existence, the identity must remain in doubt.

S. Rhodesia. October to April. (T.M. and R.M. colls.)

T. Panzeri var. *Caliban*, n.v.

♀, 9.5 mm. This variety differs from the preceding as follows. The pubescence on the mesonotum and thorax generally is distinctly scantier, in no way hiding the sculpture; the mesonotum is moderately shining, finely but distinctly punctured, not coriaceous as in *aethiopicus*. Posteriorly the pronotum is linear above, lacking a dorsal face. The spines on the tarsal comb are coarser and blackish at the tips, on the basal joint there are seven long ones and a short one near the base. The spines on the middle and hind tarsi black, not yellow as in *aethiopicus*. The pubescent bands on the abdomen are more distinct, and the pygidial area is distinctly, although finely and sparingly, punctured. Wings hyaline, without a trace of a fuscous tinge. Only the apical third or so of the femora is ferruginous.

♂, 7-8.5 mm. Eyes in life yellowish green or yellow. Pubescence of face golden, of the mesonotum and epinotum whitish, on the latter longer and more abundant than in *aethiopicus*, and seen from above, forming a distinct fringe round the dorsum. Femora as in the ♀, with the black colour more extensive than in *aethiopicus*. The mesonotum is shining, finely and sharply punctured, the punctures much smaller than the spaces between them. The interocular distance on the vertex is equal to the length of the second plus half of the first joint of the flagellum. As in *aethiopicus* all the joints, except the first, are slender and about twice as long as wide. The fifth and sixth sternites are simple, without lamellae. The first joint of the fore tarsi has five long spines on its outer margin. Otherwise like the ♀.

Bulawayo and Sawmills, S.R. October to April. Types in R.M. coll. (T.M. and R.M. colls.)

T. Panzeri var. *Sycorax* n.v.

♂, 10-11 mm. Eyes greenish yellow in life, pale bice-green when dead. Head black, the median area of the clypeus excepting the posterior margin, the mandibles except at the tips, and the scapes, flavo-ferruginous; the scapes sometimes fuscous above near the apex. Tegulae flavous. Thorax black. Coxae and trochanters black; the legs ferruginous, with a black streak on the inner side of all the femora at the base, of variable extent and sometimes absent. First and last segments of the abdomen ferruginous, the colour of the other segments rather variable. Usually they are blackish or brown on the basal half, and fusco-ferruginous on the apical, the sixth segment almost entirely ferruginous, the second and third sometimes ferruginous except at the apical margins. Pubescence of the face golden, short and very dense. Pubescence on the thorax fairly dense except on the dorsum of the epinotum; in fresh examples it is pale yellowish white on the mesonotum, and whitish elsewhere. The abdomen above, except the pygidium, is covered with a short but quite conspicuous pale silvery pubescence, which forms wide transverse bands on the apical halves of the segments.

The sculpture of the head and thorax is like that of *aethiopicus*, but the sides of the epinotum are not striate, only very minutely punctulate and slightly shining. The first five tergites are microscopically rugulose-punctate and dull, the sixth and seventh feebly punctulate and nitidulous, the seventh widely rounded at the apex. The eighth sternite widely emarginate, the lateral angles

dentiform. The whole ventral surface of the insect is feebly rugulose and almost dull. Clypeus like that of *aethiopicus*. Eyes strongly convergent above, the interocular distance on the vertex being equal to the length of the second joint of the flagellum. The latter slender, the first joint a little longer than wide, all the rest at least twice as long as wide. Posteriorly the pronotum is linear above. Epinotum as long as the mesonotum, not more than one-third wider behind than long in the middle. Spines on the legs ferruginous, the inner calcar of the hind tibia brownish. The basal joint of the fore tarsus has six long pale yellowish cilia on the outer margin.

Bulawayo. October. Numerous ♂♂ were found swarming round a flowering bush, but no ♀♀ were seen. Type in R.M. coll. (T.M. and R.M. colls.) There are three ♂♂ in the British Museum coll. unnamed, from the Lonely Mine, S.R. (leg. Swale, 1913-1919, 120).

T. Panzeri race *rhodesianus* Bischoff. *Archiv f. Naturges.* p. 64, ♂. 1913.

♂, 13 mm. Head and thorax black, eyes greenish yellow, coxae, trochanters and extreme base of the posterior femora black, the rest of the legs and the abdomen pale ferruginous, the third and fourth tergites with a narrow transverse cloud of blackish colour near the base. Scapes brown. Clypeus and face up to the ocellar area covered with a dense and deep golden pubescence. Thorax and abdomen covered with a deep golden pubescence (fading to brassy golden in old specimens), almost reddish golden on the mesonotum; the pubescence is adjacent and very fine on the sternum and abdomen, longer on the thorax above and the sides of the epinotum, almost obscuring the sculpture on the mesonotum, and forming transverse bands on the apical margins of the tergites which are distinct only when viewed obliquely from behind. Legs finely pubescent.

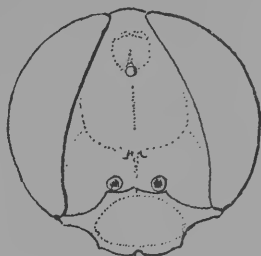
Sides of epinotum closely and very finely striate lengthwise, the declivity more strongly so and transversely, the rest of the thorax and the head microscopically reticulate-punctate and dull. Median area of the clypeus not swollen, its anterior margin feebly sinuate and rounded at the corners. Antennae long and slender, the second joint of the flagellum fully twice as long as the first. Eyes strongly convergent above, the interocular distance on the vertex almost equal to the length of the second joint of the flagellum. Dorsum of epinotum about as long as the mesonotum, not much narrower behind than in front, only one and a half times wider at the base than long, its junction with the declivity sharply marginate. Seventh tergite rounded, eighth sternite feebly dentate on each side of the apical margin. Inner calcar of the posterior tibia not as long as the metatarsus. Spines on the legs ochreous, the anterior tarsi with a feeble comb, the spines fairly thin, of which there are about five on the first joint. Wings strongly tinged with ochreous, slightly fuscous towards the apex, the veins reddish ochreous. The first three abscissae of the radius of about equal length.

♀, 14.3 mm. Colour, sculpture and pubescence as in the ♂. Wings more deeply coloured than in that sex. Antennae distinctly slender, the first joint of the flagellum a little longer than wide, the second three times longer than wide and three times longer than the first. Interocular distance on the vertex a little less than the length of the second joint of the flagellum. Pygidial area triangular, not much longer than wide at the base, narrowly truncate at the apex, dull, shallowly and rather sparsely punctured. Comb of the anterior tarsus composed of long, stiff and yellowish cilia, of which there are eight on the basal joint. Otherwise like the ♂.

Bulawayo and Sawmills, S.R. March to April. The type of the ♂ is in the Berlin Museum, of the ♀ in the R.M. coll.

T. Panzeri var. *dolosus* n.v. (Fig. 35).

♀, 12–13 mm. Colour somewhat variable. Mandibles reddish yellow, the apices piceous. Clypeus black, with the anterior half of the median area reddish yellow, or with only the extreme apex of the same dark red, or dark brownish red at the sides and reddish yellow in the middle. In the latter case the antennae are fusco-ferruginous, the scapes even paler, but usually the antennae are black. The rest of the head, the thorax, coxae, trochanters, inner face of the femora at the base, and the pulvilli, black. Tegulae dull ochreous. Legs and abdomen foxy red, the apical third of the third, and the whole of the fourth and fifth segments sometimes black. The fourth and fifth if not black, at least darker than the rest of the abdomen. Eyes bice-green in life, blackish green when dead. Wings flavo-hyaline, the veins reddish ochreous.

Fig. 35. *T. Panzeri* var. *dolosus*, ♀.

Clypeus and face with a thin silvery pubescence. Thorax with a greyish and oblique pubescence, longest on the sides of the epinotum, lateral margins of the mesonotum and on the mesopleurae. Legs and abdomen with an exceedingly fine and rather sparse pubescence, hardly forming distinct transverse bands on the apical margins of the segments. Anterior half of the median area of the clypeus smooth and shining, with a row of coarse punctures behind, the rest of the clypeus and the head closely and finely punctured and dull, the temples microscopically punctured and moderately shining. Mesonotum shining, finely and sharply punctured, the punctures much smaller than the spaces between them. Scutellum moderately shining, a little more closely punctured than the mesonotum, the metanotum closely punctured and dull. Mesopleurae, sides and dorsum of the epinotum dull, microscopically reticulate-punctate, the declivity moderately shining, coarsely and transversely striate, the brow of the declivity distinctly marginate. Abdomen moderately shining, shallowly and microscopically rugulose; pygidial area narrow, elongate triangular, at least three times as long as wide at the base, the sides sharply marginate, subacute at the apex, shining, sparsely and finely punctured. Spines and tarsal comb reddish yellow, the comb composed of long, curved and stout bristles, longest on the penultimate joint, the first joint with eight bristles.

Anterior margin of the median area of the clypeus feebly convex, bluntly angular on each side, shallowly excised in the middle, and with a pre-marginal transverse impression. Antennae slender and long, the first joint of the flagellum a trifle longer than wide, the second four times longer than wide at the apex and two and a half times longer than the first. Eyes distinctly convergent above, the interocular distance on the vertex nearly equal to the length of the second joint of the flagellum. Ocellar area tumid, impressed lengthwise in the middle, the impressed line continued above as far as the occipital margin and below as far as the level of the antennal sockets. Dorsum of epinotum long, as long as the mesonotum and only a little shorter than it is wide at the base. First three abscissae of the radius of about equal length.

♂, 9.3 mm. Eyes greenish yellow in life, chrome yellow when dead. Colour like that of the ♀, but the colour of the legs and abdomen is a shade paler, and the inner face of the femora is black only at the extreme base. Sculpture and pilosity as in the ♀. Face and clypeus with pale golden pubescence. Second joint of flagellum twice as long as the first. The interocular distance on the vertex is slightly greater than the length of the second joint of the flagellum. The anterior tarsi without a distinct comb, the spines short.

Seventh tergite widely rounded at the apex, the eighth sternite feebly emarginate, the angles dentiform. Otherwise like the ♀.

Sawmills, S.R. September to October. Types in the R.M. coll. (R.M. and T.M. colls.).

T. Tuckeri n.sp. (Fig. 36).

♂, 11 mm. Eyes greenish yellow. Head, thorax, coxae, trochanters and femora, black; tibiae and tarsi ferruginous, the posterior tibiae brown underneath; first three segments of the abdomen pale ferruginous, the remaining segments fusco-ferruginous, all the apical margins flavo-testaceous. Tegulae flavo-testaceous, the wings flavo-hyaline, the veins brown.



Fig. 36. *Tachysphex Tuckeri*, ♂. Clypeus and apical half of wing.

Clypeus and face covered with short brassy-golden pubescence, the rest of the head and the pro-mesonotum glabrous, the epinotum, mesosternum and mesopleurae with an exceedingly fine and short, outstanding, brownish pubescence. Dorsal surface of abdomen almost glabrous, having only a microscopic and sparse pubescence, the ventral segments with a short and sparse brownish pubescence, somewhat longer and denser on the apical margins. Clypeus, face and vertex dull, very finely and closely punctured, only the anterior half of the median area of the clypeus shining and with a few coarse punctures. Temples, occiput, pronotum, mesothorax and scutellum shining, finely but distinctly punctured, the punctures much smaller than the spaces between them, except on the middle of the mesonotum; more sharply and more distantly punctured than in *Panzeri*, var. *dolosus* ♂. Dorsum of epinotum dull, microscopically reticulate-rugulose, with a few short longitudinal rugae at the base, the declivity dull and transversely striate, the sides slightly shining and microscopically rugulose. Abdomen nitidulous, the first three segments microscopically rugulose, the last four segments punctured; shallowly and sparsely so above, strongly and fairly closely punctured below.

Median area of clypeus not gibbose as in the *Panzeri* group, only moderately convex, and very slightly produced in front, the anterior margin of the median area obtusely angular in the middle. Antennae fairly slender; the first joint of the flagellum as long as wide, the second joint as long as the third and two and a half times longer than the first. The interocular distance on the vertex is equal to the combined length of the first two joints of the flagellum.

Dorsum of epinotum twice as wide at the base as long, and together with the metanotum as long as the mesonotum. Seventh tergite widely truncate at the apex, trapezoidal; eighth sternite shallowly emarginate at the apex. Anterior femora moderately excised near the base, the anterior tarsi without a comb. Spines on the legs ferruginous, the inner calcar of the hind tibia very little shorter than the basal joint of the tarsus. Third abscissa of the radius about one-third longer than the first, the latter a little longer than the second; the third cubital cell not linguæ as in the *Panzeri* group, the third transverse cubital vein being parallel to, and very little longer than the second, so that the cell is not much shorter on the radius than on the cubitus.

Montagu, C.P. (R. W. Tucker), October; type in the S.A. Museum coll. In general appearance this species is very much like one of the *Panzeri* group, from which it may be easily distinguished by the strongly punctured fourth to seventh abdominal segments, the shape of the third cubital cell, and the median area of the clypeus.

The five following species described by Turner are not represented in the S. African collections which I have seen.

T. auropilosus Turner. *Ann. Mag. N.H.* XIX, No. 112, p. 321, ♀. 1917.

"♀. Nigra; callis humeralibus, tegulis abdomine, pedibusque rufo-testaceis; segmentis ventralibus nigro intaminatis; clypeo, fronte, thorace, segmento mediano, segmentisque dorsalibus margine apicali praecipue aureo-sericeo-pubescentibus; alis pallide flavo-hyalinis, apice pallidissime infuscatis, venis testaceis. Long. 14 mm."

"♀. Clypeus broadly rounded at the apex; eyes separated on the vertex by a distance not quite equal to the length of the second joint of the flagellum. Thorax and median segment very closely and minutely punctured, rather thinly covered with very short, delicate golden pubescence; the posterior slope of the median segment (*i.e.* declivity of the epinotum) finely transversely striated, with a deep median sulcus. Pygidial area elongate-triangular, shining, sparsely and rather strongly punctured, very narrowly truncate at the apex. Comb of the fore tarsi long; tibiae with short golden pubescence. Radial cell rounded at the apex, not truncate, third abscissa of the radius longer than the second, which is equal to the space between the recurrent nervures on the cubitus. Tarsal unguis very long, as in the genus *Notogonia*."

Hab. British East Africa, Simba, 3350 ft. (S. A. Neave), April; Makindu, 3300 ft. (S. A. Neave), April.

T. depilosellus Turner. *Loc. cit.* p. 322.

"♀. Nigra; mandibulis basi, clypeo dimidio apicali, scapeo, flagello articulo primo, articuloque secundo basi, callis humeralibus, abdomine, pedibusque rufo-ferrugineis; alis anticis fuscis, posticis pallide fusco-hyalinis; venis nigris. Long. 12 mm."

"♀. Clypeus very broadly rounded at the apex, somewhat deflexed from the middle, the apical half shining, with a few large scattered punctures; the base of the clypeus and the front clothed with very short, sericeous, silver pubescence. Thorax closely microscopically punctured, the mesonotum and scutellum bare; dorsal surface of the median segment opaque, very closely and microscopically punctured, the sides of the segment obliquely, the apex transversely striated. Abdomen slender; pygidial area elongate-triangular, sparsely punctured. No pubescent fasciae on the dorsal segments. Tarsal comb long, the basal joint of the fore tarsus with eight spines. Radial cell broadly rounded at the apex; second abscissa of the radius longer than the third, which is longer than the space between the recurrent nervures on the cubitus.

Hab. N. Rhodesia, Pakasa (O. Silverlock), January.

A very slender species, easily distinguished by the fuscous wings from any other Ethiopian species with the abdomen red."

T. Brinckerae Turner. *Loc. cit.* p. 323.

"♀. Nigra; mandibulis basi, tibiis anticis basi et subtus, tarsis anticis, tarsisque intermediis posticisque apice fusco-ferrugineis; segmentis abdominalibus primo secundoque rufo-ferrugineis; tegulis testaceis; alis flavo-hyalinis, apice pallidis; venis testaceis. Long. 13 mm."

"♀. Clypeus broadly truncate at the apex, finely and closely punctured on the basal half; the apical half deflexed, shining, with large scattered punctures. Vertex very closely microscopically punctured; the eyes separated on the vertex by a distance slightly exceeding the length of the second joint of the flagellum; front and base of the clypeus clothed with very short silvery

pubescence, which is only visible in certain lights. Thorax minutely and closely punctured; median segment granulate, as long as the mesonotum, the sides and apex of the segment striated. Second and third dorsal segments with a little short silver pubescence at the apical angles; pygidial area elongate-triangular, sparsely punctured. Comb of the fore tarsus long, basal joint of the fore tarsi with eight spines. Radial cell broadly rounded at the apex; second abscissa of the radius longer than the third, nearly twice as long as the space between the recurrent nervures on the cubitus.

Hab. Transvaal, Pretoria (Miss J. Brincker)."

T. subfuscatus Turner. *Loc. cit.* p. 323.

"♀. Nigra; segmentis abdominalibus duobus basalibus fusco-rufis; tarsis fusco-ferrugineis; alis subhyalinis, venis fuscis; clypeo, fronte, segmentisque dorsalibus tribus basalibus fascia apicali argenteo-pubescentibus; thorace rugose punctato; segmento mediano longitudinaliter striato-reticulato. Long. 9 mm."

"♀. Clypeus broadly truncate at the apex, the apical margin armed with a number of ill-defined teeth. Head closely and rather finely punctured; antennae short and stout; eyes separated on the vertex by a distance slightly exceeding the length of the two basal joints of the flagellum. Thorax coarsely punctured-rugose; scutellum punctured; median segment irregularly longitudinally striate, with finer transverse striae, giving a reticulate appearance, which is more strongly developed on the more coarsely sculptured sides of the segment. Pygidial area smooth, rather broadly triangular. Legs slender; comb of the fore tarsi long; spur of the hind tibia much shorter than the basal joint of the hind tarsi. Radial cell broadly obliquely truncate at the apex; second and third abscissae of the radius subequal.

Hab. Nyassaland, Mlanje, 2300 ft. (S. A. Neave), October."

Although somewhat smaller than the Rhodesian specimens, I think that this species will prove to be synonymous with *prosopigastroides* Bischoff, with which the above description agrees.

T. strigatus Turner. *Loc. cit.* p. 324.

"♀. Nigra; tarsis articulis apicalibus brunneo-ferrugineis; fronte clypeoque argenteo-pubescentibus; mesonoto crasse punctato, cinereo-piloso; segmentis dorsalibus tribus basalibus fascia interrupta apicali argenteo-pubescente; segmento mediano fortiter longitudinaliter striato; alis hyalinis, venis brunneo-ferrugineis; tegulis testaceis. Long. 9-11 mm."

"♀. Clypeus broadly subtruncate at the apex, the apical margin somewhat reflexed and with two blunt teeth on each side, closely and not very finely punctured. Eyes separated on the vertex by a distance half as great again as the length of the second joint of the flagellum. Mesonotum and mesopleurae coarsely punctured-rugose; scutellum strongly but not very closely punctured. Median segment coarsely longitudinally striated, with finer, irregular, transverse striae between; the sides of the segment coarsely rugose-reticulate. Abdomen shining; pygidial area triangular, shining, with a few small scattered punctures. Radial cell rather broadly obliquely truncate at the apex; second abscissa of the radius a little longer than the third, equal to the distance between the recurrent nervures on the cubitus."

Hab. N.E. Rhodesia and Nyassaland.

The following species, unknown to me, have also been recorded from the Ethiopian Region.

T. capensis Saussure, *Reise der Novara*, Zool. II, P. I, p. 71, ♂. 1867.

T. flavogeniculatus Taschenberg, *Zeitsch. f. d. ges. Naturw.* LIII, 778, ♂. 1880.

- T. Nattereri* Kohl. *Verh. Zool. Bot. Ges.* xxxviii, 144, ♀, ♂. 1888.
T. quadricolor Gerstaecker. *Monatsb. Akad. Wiss. Berlin*, p. 510, ♀. 1857.
T. agilis Smith. *Cat. Hymen. Brit. Mus.* iv, 284, ♀. 1856.
T. Schoenlandi Cameron. *Records Albany Mus.* p. 211. 1905.
T. Pentheri Cameron. *Ibid.* p. 212. 1905.
T. tenuicornis Bischoff. *Denkschr. d. med.-Naturwiss. Ges. Jena*, xvii, 120, ♀, ♂. 1913.
T. collaris Kohl. *Ann. K.K.N.H. Mus. Wien*, xiii, 100, ♀. 1898.

Of these the first, *capensis* Sauss. and *agilis* Smith, are not sufficiently characterised in the original descriptions, and failing an examination of the types, will remain unidentifiable. Of *flavogeniculatus* I have been unable to obtain a copy of the original description; it was recorded from Abyssinia and is not likely to be found within our limits.

The description of *quadricolor* Gerst. is fuller, but nevertheless inadequate, since no mention is made of the distance between the eyes on the vertex. I have not seen any insect which agrees with the description, which is quoted hereunder, but have a single ♀ which might be regarded as a variety.

T. quadricolor Gerstaecker.

"Alis flavis, apice late fuscis, nigra, sericea, clypeo, mandibulis, antennarum basi, tegulis, abdomine pedibusque laete rufis. Long. lin. $5\frac{1}{2}$. Fem. (*Lyrops quadricolor*)."

"Of the build and size of *Lyrops rufiventris* Spinola (*Ann. Soc. Ent. France*, vii, 479) with which species this one also agrees in the presence of a distinct appendix (accessory cell) to the radial cell of the forewing. The head is dull black, the face covered with dense silver white pubescence as far as the posterior margins of the eyes; the clypeus, the mandibles excepting the blackish tips, and the first four joints of the antennae bright ferruginous. The thorax is also dull black, very finely shagreened punctate, with a thin and greyish pubescence, only the sides of the epinotum with a somewhat denser and slaty-grey pubescence; the tegulae bright ferruginous. The whole of the abdomen is also bright ferruginous, its anterior segments being traversed by a blunt transverse ridge (*stumpfen Querleiste*), those on the first two segments lying behind the middle of their length, that on the third lying at the middle; the apical segment of the female is long and acute, pyramidal, finely marginate laterally, the pygidial area with scattered but distinct punctures. On the legs only the coxae and trochanters are black, all the rest bright ferruginous; the tibiae are slender, bluntly carinate longitudinally and furnished with fine spines. The wings are light yellow, their apical third brown and with a violaceous sheen; the veins on the yellow portion of the wings rust coloured, on the apical portion brown. One ♀ example from Mosambique."

The transverse ridges on the first three tergites furnish a character which is unknown to me in any other species of the genus. It is very probable that the author intended to indicate by that term the boundary between the apical depressions and the rest of the segments, in which case the expression "Querleiste" is hardly applicable.

T. Schönlandi Cameron.

"Black, the basal half of the abdomen red; the apex of the femora, tibiae and tarsi rufo-testaceous, the spines paler; the front, face and clypeus thickly covered with golden pubescence; wings hyaline, the nervures and stigma testaceous. Male. Length 10 mm. Grahamstown. Dr Penther."

"Eyes strongly convergent above, separated on the top by not much more than half the length of the antennal scape. Basal half of the mandibles black,

covered with golden pubescence; the apical dark red. Mesonotum and scutellum closely and distinctly punctured; their pleurae more shining and only weakly punctured. Metanotum (= epinotum) opaque, coarsely alutaceous, the apical slope irregularly transversely striated; the metapleurae (= sides of epinotum) finely, closely and regularly striated. Penultimate abdominal segment coarsely punctured, the last smooth, bare, transverse at the apex."

This is almost certainly a form of *Panzeri* and possibly synonymous with my variety *Caliban*.

T. Pantheri Cameron.

"Black, the basal two segments of the abdomen red; the apical half of the clypeus and labrum yellow, tinged with testaceous; mandibles rufous, yellow at the base; the apex of femora, tibiae and tarsi rufous; wings hyaline, the nervures and stigma testaceous. Male. Length 9 mm. Grahamstown. Dr Panther."

"Front and face thickly covered with silvery pubescence; they are, with the vertex, opaque, closely, finely punctured. Vertex furrowed in the middle above; above the ocelli is a reversed U-shaped furrow. Palpi rufo-testaceous. Thorax opaque, covered with white pubescence; the metanotum (= epinotum) transversely, the metapleurae more closely and regularly longitudinally striated. Abdominal segments banded with silvery pubescence; pygidium indistinctly, sparsely, finely punctured; the apical half of the epipygidium coarsely punctured. Eyes at the top separated by almost the length of the antennal scape. Tegulae rufo-testaceous."

I am inclined to suspect an error in the above description. I do not know of a single species of the genus in which the epinotal dorsum (= metanotum Cameron) is *transversely* striated. Probably "longitudinally" is intended. If so, this is also a form belonging to the *Panzeri* group.

T. tenuicornis Bischoff.

"♀. Black; a spot on the underside of the first antennal joint, the tegulae, and also the veins of the wings at the base, pale yellowish; the clypeus in the middle of the anterior margin, the labrum, the mandibles, apices of the femora, tibiae and tarsi of all the legs reddish yellow, the inner faces of the tibiae infuscate; the apical margins of the abdominal segments testaceous. The wings are clear hyaline.

The interocular distance on the vertex is about equal to the length of the first joint of the flagellum. The face is evenly convex; and under the thick pubescence a median longitudinal impression is hardly to be recognised. The median area of the clypeus, seen from the side, is evenly rounded, not abruptly angulated and impressed; the anterior margin is depressed and shallowly excised in the middle. The labrum is somewhat projecting and turned down at the apex. In the middle it bears a smooth longitudinal carina or swelling; the lower lateral edges are margined with short stiff hairs. Head dull, closely and finely punctured, only the underside shining. The rest of the body, excepting the pleurae, epinotum and metanotum, is shining.

The antennae are very slender and thin. The joints, from the third onwards, subequal in pairs; only the twelfth shorter than the preceding. The prothorax is depressed, and barely visible from above when the head is pressed back. The mesonotum is evenly, very finely, sparsely punctured and covered with a thin greyish pubescence. The punctures on the scutellum are somewhat coarser but more widely spaced. The epinotum is finely and closely coriaceous-rugose, here and there with indistinct longitudinal striae. The declivity is impressed in the middle and transversely rugose. The pleurae are exceedingly

finely shagreened; the sides of the epinotum longitudinally striolate. The whole thorax is evenly pubescent.

The tibiae with brighter spines, only the calcaria darker. The comb of the fore tarsus is normally developed. The abdomen exceedingly finely punctured and pubescent. The pygidium is fairly elongate, finely marginate laterally and moderately curved, the apex truncate, finely punctured, and with a few shallow and larger punctures interspersed.

The first three abscissae of the radius of about equal length.

♂. The male is exceedingly like the female. Unfortunately in the specimen before me the head is lacking, so that nothing can be said about the structure of the antennae. Length, ♀ *ca.* 10 mm. Princes Bay, south of Luderitz Bay."

T. collaris Kohl.

"♀. Niger; albo-pubescent et tomentosus. Caput a fronte visu transverse ellipticum. Frons subtiliter coriacea, quam subtilissime punctulata simillimo modo *T. gallici* Kohl. Oculi in vertice longitudine antennarum flagelli articulum 3^{um} + 4^{um} inter se fere plus distant.

Collare solito minus demissum, medium tuberculo compresso, supra parum exciso instructum. Dorsulum et mesopleurae nitida nequaquam dense punctulata. Pleurae segmenti mediani longitudinaliter strigosae; area dorsalis irregulariter rugosa et rugulosa; area postica transverse striata. Area pygidialis abdominis nitida, subangusta, punctulis minutis sparsis punctata. Long. 8-9 mm."

"Black. The tarsi more or less tinged with brownish red. Pubescence and tomentum white. First five abdominal segments with wide and incomplete apical bands of pubescence. Wings almost clear hyaline. The head, seen from in front, is transversely elliptical, as in *T. gallicus* Kohl, to which this species is very similar in many points. The median area of the clypeus is transversely truncate in front, the margin not quite even owing to a few shallow excisions along its course. The vertex is dull, coriaceous, minutely punctulate.

The interocular distance on the vertex is fully equal to the combined length of the third and fourth joints of the flagellum. The second joint of the latter is about twice as long as wide at the apex, and about as long as the third.

The collar of the pronotum lies by no means so low as in *gallicus*, in the middle (posteriorly) there is a compressed swelling which is emarginate above; this feature especially characterises the present species. Mesonotum and scutellum fairly shining, punctured, the punctures not dense; the mesopleurae more densely punctured. Sides of the epinotum fairly coarsely striate lengthwise. Dorsum of the epinotum irregularly rugose, more coarsely so in the middle than at the sides; the declivity transversely striate. Pygidial area elongate triangular, not flat but convex lengthwise, fairly shining, sprinkled with a few very fine punctures. The third cubital cell is linguately produced.

East Africa, Waboniland. Types in the Vienna Museum."

ATELOSPHEX gen. nov. (ἀτελής, incomplete).

CHARACTERS (♀). Eyes not touching the base of the mandibles, separated from them by a very short cheek, only moderately convergent above, the interocular distance on the vertex much greater than in any species of *Tachysphex*. Scapes subclavate, swollen underneath over the apical half. Face wide, shallowly excavated below, the upper margin of the excavation bounded by a sinuous barely raised line extending outwards from just above the antennal sockets to a little above the level of the middle of the eyes. The antennae inserted low down, almost as low as in *Miscophus*. Temples well developed,

much larger than in *Tachysphex*. Pronotum fairly long, not sunk much below the level of the mesonotum, with a distinct posterior dorsal face or collar. Pronotal tubercles nearer the tegulae than in *Tachysphex*. Mesopleurae without an episternal suture. Third cubital cell shorter on the cubitus than the second cubital cell, not linguatate and produced outwards beyond the apex of the radial cell. Dorsum of epinotum wide and short. Pygidium moderately compressed laterally. Otherwise like *Tachysphex*.

Type of genus, *Atelosphex miscophoides*.

A. miscophoides n.sp. (Fig. 37 a, b, c).

♀, 6 mm. Head and thorax black, mandibles in the middle, palpi, tibiae, tarsi and apices of the femora flavo-ferruginous, the swollen portion of the scapes and the tegulae flavous. First and second abdominal segments ferruginous, the first black at the extreme base above, the third segment ferruginous or fusco-ferruginous, with the apical margin widely testaceous, the remaining segments piceous or dark reddish brown with testaceous apical margins.

Clypeus, face, temples and thorax with a rather coarse, oblique and not dense pubescence, pale silvery golden on the clypeus, face and mesonotum, whitish or silvery elsewhere, longest on the posterior lateral margins of the declivity, and almost absent from the dorsum of the epinotum. Tergites with a very scanty, decumbent and microscopic pubescence, the first three with transverse apical bands of longer and silvery pubescence, interrupted in the middle. The ventral segments with a few exerted hairs on the apical margins, otherwise glabrous.

Head and thorax, excepting the epinotum, dull, closely punctured, the face and mesothorax strongly and deeply punctured, the clypeus finely, the temples and pronotum shallowly so. The depressed anterior half of the median area of the clypeus smooth and shining. The punctures on the mesonotum larger and more widely spaced than elsewhere; the metanotum dull and coriaceous punctate. Dorsum of epinotum strongly reticulate-rugose, the rugae near the base strengthened lengthwise, slightly shining between the rugae; the sides obliquely, the declivity transversely and closely striate, punctulate between the striae. Abdomen nitidulous, closely and sharply punctured above, more shallowly punctured below; the pygidial area shining, with a few large punctures. Median area of clypeus wider than long, sharply deflexed at the middle, its anterior margin convex and angular at the corners. Face between the eyes wide, resembling that of a *Miscophus*, the distance between the eyes across the clypeus being barely twice as long as across the vertex. The face is very shallowly excavated below, the brow of the excavation forming a sinuous, shining line on each side, extending from above the antennal sockets to about the level of the middle of the eyes. The interocular distance on the vertex is equal to the combined length of the first two joints of the flagellum plus half of the third. Antennae long and slender; the scape is swollen below on its apical half, the swelling translucent and vesicular. The scape is almost as long as the first two joints of the flagellum combined; the

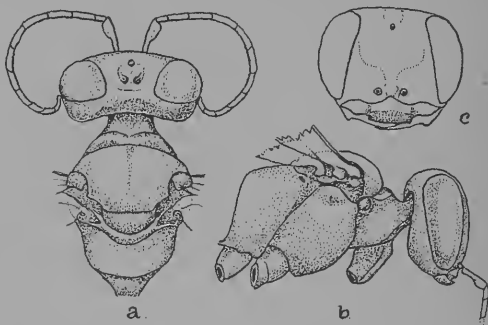


Fig. 37. *Atelosphex miscophoides*, ♀. a. dorsal, b. lateral view of head and thorax; c. head from in front.

first joint is a little longer than wide, the second twice as long as the first and a little shorter than the third, all the joints clearly longer than wide. The ocellar area is almost flat, not strongly swollen as in *Tachysphex*, the vertex behind it has a short and shallow transverse impression. Temples well developed, widening below, seen from the side wider at their widest point than the eyes. Pronotum fairly long, sunk very little below the level of the mesonotum, with a well developed collar posteriorly which is convex transversely and from front to back, rounded at the lateral angles and faintly impressed in the middle. Thorax robust and wide, the mesonotum at its widest is very little shorter than the length of the thorax from the pro-mesonotal suture to the apex of the epinotal dorsum. The latter is fairly flat, convex at the sides and behind, about two and a half times wider across the base than long. The declivity is vertical, with the usual deep and longitudinal sulcus in its upper half, its junction with the dorsum subrectangular. The abdomen is shaped as in *Tachysphex*, but the pygidium is laterally compressed below its dorsal area. The latter is elongate-triangular, a little longer than wide at the base, acute at the apex, feebly marginate at the sides. Legs feebly spinose, the spines whitish. Inner calcar of the hind tibia only a little more than half as long as the metatarsus. Claws and pulvilli small. Comb of the anterior tarsus composed of thin and not very long cilia, of which there are six widely spaced ones on the basal joint. Wings hyaline, tinged with fuscous, the veins and stigma brown. The radial cell is fairly widely truncate apically; the first abscissa of the radius is very little longer than the second, which is about one-fourth longer than the third. The third cubital cell is not quite twice as wide on the cubitus as it is on the radius.

Willowmore, C.P. (H. Brauns). December. Type in the R.M. coll.

TACHYTES Panzer

Krit. Rev. II, 129. 1806.

CHARACTERS. Build robust, often resembling in general appearance some of the solitary *Apidae*. The eyes reach the base of the mandibles, their inner margins convergent above. Head very short behind the eyes. Ocelli on a raised area, the anterior ocellus round and convex, the posterior flattened, elongate and more or less retort-shaped. Face without swellings parallel to the inner margins of the eyes. Mandibles excised on the lower margin (very feebly so in the subgenus *Holotachytes* Turner), bidentate on the inner margin near the middle. Maxillary palpi six-, labial palpi four-jointed as usual in the Larridae, but five- and three-jointed respectively in the subgenus *Calotachytes* Turner. Thorax similar to that of *Tachysphex*, but the epinotum is more rounded at the brow and from side to side than in that genus, and the dorsum of the epinotum usually has a median longitudinal impressed line which ends in a fovea at the apex, and the fovea is generally continued into the median sulcus of the declivity. A pygidial area present in both sexes, triangular in the ♀, trapezoidal in the ♂, nearly always densely covered with adpressed pubescence. Venation of the wings like that of *Tachysphex*. All the tibiae spinose. A tarsal comb present in both sexes, composed of stiff spines, but feebler in the ♂. The anterior femora of the ♂ entire, and with the outer side nearly always covered with a dense and exerted pubescence. Distribution, cosmopolitan.

The life history is like that of *Tachysphex*. Although so much like some of the solitary bees in general appearance, these insects when alive can hardly be mistaken for them since their flight and habits are very different. As their generic name implies, they are very quick in their movements and of a restless

disposition. Both the males and females are fond of resting in sunny situations, flying up at the slightest disturbance, only to return to the same spot a few moments later. The males will often rest on leaves and twigs of the plants which border the open sandy spots on which the females dig their burrows. In my experience, none of our species is common, or at any time plentiful.

The student will find this an exceedingly difficult genus. It is composed of an assemblage of very similar forms, most of which are closely allied. In many cases the differences between one species and another are fairly patent to the naked eye, but unfortunately these very differences are chiefly those of colour of the pubescence, and size and build. The size is variable, and the colour of the pubescence is not very reliable, since it fades with age even in the living insect. The sculpture is singularly uniform, and varies in the majority of the species within such narrow limits that, even with the aid of the magnifying glass, it is not easy to define in comparative terms.

One of the most valuable diagnostic characters lies in the form and length of the galea, the use of which we owe, I believe, to Turner. For this reason it is well to remember, when pinning the fresh insect, to separate the mandibles and to draw out the mouth parts so that they may be examined without difficulty. Another character on which Turner has laid some emphasis, is the number of spines on the basal joint of the anterior tarsus. Used alone, this character is quite unsafe, because some of the spines may break off during the digging operations of the insect. It might be supposed that the number of spines originally present would nevertheless be ascertainable by the recognition of the stump or point of insertion of the broken-off spines; this, however, is far from being the case, because when broken off close to the joint it leaves practically no distinct scar at all. Moreover, the number of spines is rarely the same in both sexes of a species. In some of Turner's types in the British Museum collection, the number of spines differs on the left and right tarsi.

The genital armature of the male would probably furnish useful diagnostic characters for that sex, but unfortunately would not help us in sexing the species correctly. The females, in my experience, are, more often than not, taken without accompanying males.

Turner's short monograph of the African species (*Ann. Mag. N.H.* xx, No. 115, pp. 1-43, 1917) is a valuable piece of work which brings together for the first time a fairly full account of all our species, the majority of which have been made known by Turner himself. I have examined all the types of Turner's species in the British Museum collection, and with the camera lucida taken measurements of the interocular distances in relation to the length of the flagellar joints, and also of the galea. The result of that examination was to show that Turner's paper contains several inaccuracies and has some notable omissions. These I propose to correct when dealing with the species in question. The descriptions of the earlier authors, especially of F. Smith, are well-nigh worthless, being based almost entirely on colour. I would have preferred to preface the descriptions of the species with an analytical key, as I have done for the preceding genera, but in order not to delay the publication of the second part of this monograph, the key will have to be printed in the next, since its construction will require a far greater comparative study of all the species than I have so far been able to give to it.

Since the mouth parts are of such importance in the determination of the species, it is essential to get a clear idea of their anatomy. Fig. 38 will, I hope, be helpful in that direction. It should be noted that the *galea* of Turner does not represent solely that member of the mouth parts but consists of the galea and the lacinia (outer and inner ridges of the anterior maxilla), fused into

one piece. In measurements of that part, care should be taken not to include the basal part of the anterior maxilla (marked *a* in Figs. 38 A and B).

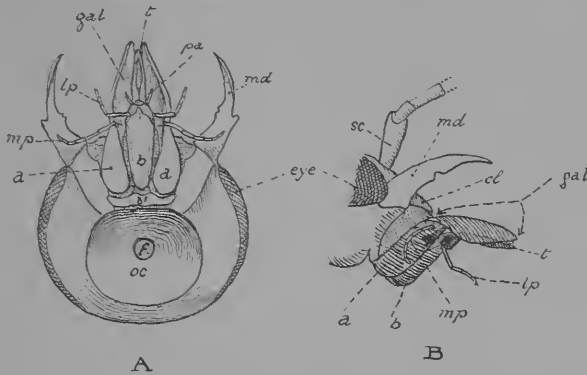


Fig. 38. Head and mouth parts of *Tachytes opposita*, ♂; A from below, B from the side. *md.* mandible; *cl.* clypeus; *mp.* maxillary palp; *lp.* labial palp; *t.* tongue (fused inner ridges or laciniae of the posterior maxilla); *pa.* paraglossae (outer ridges of the posterior maxilla); *gal.* "galea" (fused inner and outer ridges of the anterior maxilla); *a.* basal piece of the anterior maxilla (stipes and palpiger fused, with perhaps also the cardo); *b.* mentum; *b'.* submentum; *oc.* occipital cavity; *f.* foramen; *sc.* scape. The membranous areas are shown dotted.

Turner has divided the genus into the following subgenera, *Tachytes* Panzer s.str., *Holotachytes* Turner and *Calotachytes* Turner.

Subgenus HOLOTACHYTES Turner

Ann. Mag. N.H. xx, No. 115, p. 10. 1917.

CHARACTERS. "Differs from typical *Tachytes* in the absence of the incision on the outer margin of the mandibles¹, in the striation of the dorsal surface of the median segment (*i.e.* epinotum), and also in the longer and more rectangular shape of that segment.

Type of the subgenus *T. dichroa* Smith.

Unlike *Calotachytes* this subgenus has the galea short and broadly rounded at the apex, not rostrate; and the joints of the labial palpi are short and stout."

T. dichroa Smith. *Cat. Hymen. Brit. Mus.* iv, 299, ♂. 1856.

(*Larrada ferox*) Smith. *Ann. Mag. N.H.* (4), xii, p. 294, ♀. 1873.

This is a West African species which is unlikely to occur within our limits.

Subgenus CALOTACHYTES Turner

Loc. cit. p. 10.

CHARACTERS. "Distinguished by the five-jointed maxillary and the three-jointed labial palpi, other species of the genus having six-jointed maxillary and four-jointed labial palpi. The basal joint of the labial palpi is extremely long and slender, much longer than the second joint of the flagellum, and the galea is very elongate. These two characters, however, are also present in *observabilis* Kohl, *velox* Smith and other related species. I look on the difference in the number of the joints in the palpi as of subgeneric importance. The known species are confined to the Ethiopian region and are of large size, and have at least the four basal dorsal segments densely covered with golden or silver pubescence. The second sternite of the female is shining, with large sparse punctures.

¹ This statement is incorrect. Mr Turner has informed me, *in litt.*, that the mandibles are very feebly excised.

Type of the subgenus *Tachytes Marshalli* Turner."

Originally Turner included in this subgenus *T. mira* of Kohl, but subsequently he was able to examine the type of Kohl's species in the collection of Dr Brauns. As a result of that examination it became clear that Kohl's species was a *Tachytes* s.str. and that the species on which he had based his former conclusions was something different (Turner, in litt.). The latter species will require a new name.

T. (Calotachytes) Marshalli Turner. *Ann. Mag. N.H.* (8), ix, No. 52, p. 420, ♀, ♂. 1912.

"♀. Nigra; albo-pilosa; abdomine sericeo, segmentis dorsalibus 1-4 fascia lata apicali argenteo-pilosa; alis fusco-hyalinis, venis fuscis; area pygidiali fulvo-setosa. Long. 22 mm."

"♀. Clypeus broadly subtruncate at the apex. Eyes strongly divergent towards the clypeus, separated on the vertex by a distance equal to the length of the second joint of the flagellum, which is equal to the third joint. Basal joint of the fore tarsi with seven rather stout spines. Thorax very finely and closely punctured, median segment a little more sparsely punctured. Four basal dorsal segments of the abdomen covered with short silvery pubescence, which is much closer and more shining on a broad band on the apex of each segment. Pygidial area rugosely punctured and clothed with short fulvous setae, narrowly rounded at the apex and nearly twice as long as the basal breadth. Spines of the tibiae and tarsi testaceous brown. Third abscissa of the radius a little longer than the second, but a little shorter than the first; third cubital cell less than half as long as the second on the cubitus; the distance between the recurrent nervures on the cubitus is about equal to the length of the second abscissa of the radius. The radial nervure is thickened at the base.

♂. As in the female, but the pygidial area is nearly as broad at the base as long, broadly rounded at the apex, and the third cubital cell is rather longer both on the radius and the cubitus.

Hab. Salisbury, Mashonaland. April (G. A. K. Marshall); Lilongwe dist. Central Angoniland, 4000-5000 ft.; Nyasaland, between Rukuru Valley and Florence Bay, 4500 ft. June (S. A. Neave)."

The following notes are based on an examination of the specimens in the British Museum collection.

♀. Type 22 mm. long; another ♀, 24.5 mm. The pubescence on the face and temples is silvery. The pygidial setae are dark fulvous, and the spines on the legs are ferruginous. In one specimen the silvery pubescence of the abdomen is tinged with golden. In the type, the basal joint of the fore tarsus has seven spines on one leg, and only six on the other. The interocular distance on the vertex is greater than stated in Turner's description, being equal to the combined length of the first and second joints of the flagellum. The vertex is sparsely and shallowly punctured in addition to the fundamental fine and dull sculpture. Ventral segments shining, with pre-apical rows of coarse punctures, the apical ventral segment closely and coarsely rugoso-punctate.

♂. 20.5 mm. The first three sternites are clothed with a sparse cinereous pubescence. The interocular distance on the vertex is barely equal to the second joint of the flagellum. The apex of the eighth sternite is pilose, arcuately emarginate, the angles roundly dentiform. The galea is much longer than the scape (Salisbury). In a ♂ from Nyassaland the anterior metatarsus has five spines, but in the Salisbury specimen the metatarsus is not clearly visible. The seventh tergite is coarsely punctured and widely rounded.

T. (Calotachytes) admirabilis Turner. *Ann. Mag. N.H.* (8) xvii, No. 102, p. 444, ♀, ♂. 1916.

"♀. Nigra; fronte argenteo-pubescente, abdomine segmentis dorsalibus aureo-pubescentibus, area pygidiali fusco-aureo-setosa; alis anticis infuscatis, posticis subhyalinis, venis nigris. Long. 23 mm."

"♀. Clypeus scarcely convex, the apical margin almost transverse, very finely and closely punctured, clothed with short silver pubescence, slightly deflexed from the middle to the apex. Eyes separated on the vertex by a distance nearly equal to the combined length of the two basal joints of the flagellum; second joint of the flagellum distinctly longer than the third. Median segment more than half as long again as the scutellum, with a very obscure impressed median line; the posterior slope rather indistinctly transversely striated, with a deep median sulcus; pubescence of the thorax and median segment greyish and very sparse.

Dorsal surface of the abdomen densely covered with golden pubescence, which is denser and brighter on the apical than on the basal half of the segments; apical half of the fifth dorsal segment and basal half of the first without golden pubescence. Pygidial area elongate, very narrowly rounded at the apex, densely clothed with short setae, which change according to the light from fulvous-gold to black. Second ventral segment shining, with sparse and fairly large punctures. Basal joint of the fore tarsus with six spines. Second abscissa of the radius a little longer than the third, both being distinctly longer than the space between the two recurrent nervures.

Hab. Uganda (various localities). August.

This is very near *T. mira* Kohl, but differs in the dark fore wings, in the distinctly greater distance between the eyes on the vertex, in the coarser pubescence of the pygidial area (this area being also rather narrower at the apex), and in the greater size. The male of this species differs from the male of *mira* in the infusate fore wings, in the shape of the seventh dorsal segment, which is truncate at the apex, not very broadly rounded as in *mira* (this segment in both species is very broad, not narrow as in *observabilis* Kohl); the eighth ventral segment is much more shallowly emarginate, with shorter teeth at the apical angles than in *mira*."

This species is very much like *T. Danaë (mira)* Turner, nec Kohl but is larger and the golden pubescence of the abdomen has a more fulvous tint. Turner is in error in regard to the interocular distance on the vertex; it is equal to the length of the second joint of the flagellum, and not to that of the first and second. The galea is much longer than the scape. Ventral segments shining, with large pre-apical punctures. Wings distinctly darker than in *Danaë*.

♂. Anterior metatarsus with five spines. Interocular distance on the vertex equal to about two-thirds of the length of the second joint of the flagellum, and less than twice the length of the first. Eighth sternite as in *Danaë*. Thorax, especially the epinotum above, a shade more strongly punctured, but otherwise almost indistinguishable from the ♂ of *Danaë*. The latter is hardly more than a race of *admirabilis*.

T. (Calotachytes) Danaë n. nov. *T. mira* Turner, nec Kohl.

♀. 18–20 mm. Black, apical margins of ventral segments narrowly fusco-ferruginous. Spines on the legs ferruginous. Pilosity on the temples white, on the thorax dirty white and scanty. Abdomen with the usual dense golden pubescence, pygidial area covered with reddish golden setae; apical margins of the ventral, and of the last three dorsal segments with a few long and thick reddish hairs. Pubescence of face and clypeus pale yellowish white. Vertex

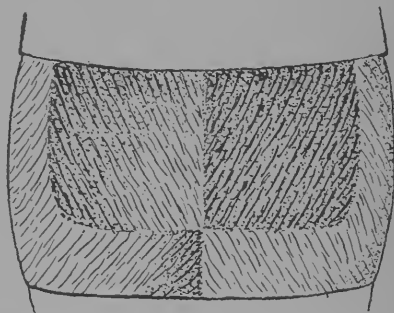
sparsely and coarsely punctured. Interocular distance on the vertex about equal to the length of the first two joints of the flagellum. Galea much longer than the scape. Anterior margin of the clypeus arcuate. Thorax closely punctured, the epinotum more strongly so than the rest, the sides of the epinotum longitudinally, and the declivity transversely, striate. Anterior metatarsi with six spines. Wings pale fusco-hyaline, slightly darker on the apical margin.

♂. 17-18 mm. Pilosity and pubescence of the face and thorax more yellowish and longer than in the ♀. The interocular distance on the vertex slightly less than the length of the second joint of the flagellum. Puncturation of the vertex shallower than in the ♀. Ventral surface of the abdomen shining, shallowly and fairly closely punctured. Pygidial setae golden. Seventh tergite broadly rounded, eighth sternite arcuately emarginate, the angles forming rounded teeth. Anterior metatarsus with five spines.

Nyasaland; Salisbury, S.R.

Subgenus TACHYTES Panzer s.str.

This subgenus may be divided into several groups, of which the first, the *basilica* group, is composed of large species having the greater part of the tergites covered with a dense and brilliant golden pubescence. This pubescence has a somewhat chequered appearance (as in *Liris haemorrhoidalis* and some other Larrids), owing to the hairs on the basal half or more of each side of the segment being turned in opposite directions, and similarly on the apical margins of each side. The direction of the hairs on the apical and basal parts of each half segment is also opposed (see diagram). The light is reflected in opposite directions by these areas, hence when in a certain position, one area will appear dark when the adjacent one is bright, and *vice-versa*.



The *basilica* group includes the following species: *basilica* Guerin, *velox* Smith, *mira* Kohl, *observabilis* Kohl, *Neavei* Turner, *perornata* Turner and *rhodesiana* Bischoff.

T. observabilis Kohl. *Ann. K.K.N.H. Mus. Wien*, ix, p. 295, ♂. 1894.

♀, 20 mm. Black, the last two tarsal joints brown. Clypeus, face and temples with long greyish silvery pubescence, on the upper face almost outstanding. Thorax and basal half of first tergite with yellowish grey pilosity; outstanding, longest and most abundant on the epinotum. Anterior femora below with greyish silvery pubescence intermixed with longer and outstanding hairs, the rest of the legs with a short, dense and adpressed yellowish pubescence. Abdomen above clothed with dark golden (almost fulvous-golden) pubescence. The fifth tergite has an arcuate row of stiff and exerted hairs a little behind the apical margin, and there are a few such hairs on the sides of the fourth. The pygidial area is covered with a dense, decumbent and fulvous-golden pubescence. The golden pubescence is absent from the declivous base of the first tergite. The first two sternites are dull, closely and finely punctured, the remaining segments shining, sparsely and strongly punctured, the apical ventral segment very finely punctured on its basal half, and very coarsely so on its apical half. The second to fifth sternites with a

pre-apical row of reddish yellow hairs. Head and thorax dull, closely and very finely punctured, the punctures larger and more distantly spaced on the mesonotum and scutellum than elsewhere.

First joint of the labial palpi nearly twice as long as the second. Anterior margin of the clypeus convex. The scape as long as the first two joints of the flagellum taken together. The second joint of the flagellum barely longer than the third, nearly three times longer than the first. The interocular distance on the vertex is equal to the length of the second joint of the flagellum. Mesonotum two and a half times longer than the scutellum, the dorsum of the epinotum as long as the combined length of the scutellum and metanotum. Pygidial area elongate-triangular, the apex narrowly rounded. Spines on the legs fulvous, the anterior metatarsus with six spines on the outer margin. Wings dirty hyaline, with a narrow, pale fuscous apical margin, the veins reddish brown.

♂, 16.5–18 mm. Pubescence of abdomen paler than in the ♀. Puncturation of the thorax, especially the epinotum, a little stronger than in the ♀. Interocular distance on the vertex equal to about half the length of the second joint of the flagellum. Abdominal segments below with a thin, reddish golden pubescence on the apical margins, the second sternite with a thin, whitish and exserted pilosity. Pubescence of the pygidial area of the same colour as the other dorsal segments, the pygidial area more widely rounded at the apex than in the ♀. All the sternites moderately shining, sparsely and fairly finely punctured, the second less strongly than the others. Anterior femora outwardly, and the middle femora behind, with pale yellowish and dense pilosity. Otherwise like the ♀.

Zanzibar (Brauns); Nyasaland; Bulawayo, S.R.; Uganda, Kenya Colony and Angola. (R.M. and T.M. colls.)

T. rhodesiana Bischoff (Fig. 39). *Archiv f. Naturges.* p. 70, ♀. 1913.

♀, 17.5 mm. Very similar to *observabilis*, but with the abdominal pubescence of a paler golden colour, and the pilosity on the face, femora and thorax longer and of a more yellowish tinge.

The sculpture and proportions of the thorax hardly differ from those of *observabilis*, but the epinotum has larger, though very shallow, punctures. The apical margins of the abdominal segments are distinctly and fairly widely ferruginous (only narrowly so in *observabilis*) and the apical ventral segment is only finely punctured. The median area of the clypeus is slightly produced, its anterior margin emarginate in the middle and ending on each side in three short teeth. The interocular distance on the vertex is considerably greater than in *observabilis*, being very nearly as long as the combined length of the first two joints of the flagellum. The second joint of the latter is one-third longer than the third. The pygidial area has denser pubescence than in *observabilis*, and is of the same colour as the rest of the abdominal pubescence.

The anterior tibiae have spines on the outer margin which are fully as long as those of the tarsal comb (shorter in *observabilis*) and the first tarsal joint has a row of five long spines (not six, as stated in Turner's key to the African species). The galea is much shorter than the scape, and the first joint of the labial palp is only about one-third longer than the second joint.

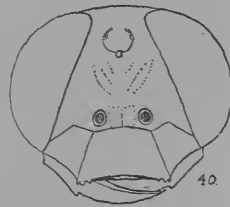


Fig. 39. *Tachytes rhodesiana*, ♀, clypeus.

Fig. 40. *Tachytes nigropilosella*, ♀, head.

♂, 18 mm. Pubescence on the abdomen of a more reddish golden tinge than in the ♀. Median area of the clypeus nitidulous, irregularly and fairly strongly punctured, the median emargination shallower, and the lateral teeth smaller than in the ♀. The interocular distance on the vertex the same as in the ♀. The apical dorsal segment of the abdomen wider than long, more widely rounded at the apex than in the ♀. The eighth ventral plate arcuately and shallowly emarginate, the angles on each side of the emargination rounded. Ventral segments of the abdomen moderately shining, coarsely and more closely punctured than in the ♀. Tarsal comb as in the ♀, but with shorter spines.

Springvale, S.R. April, ♀, type; Bulawayo, ♂, March. Type in the R.M. coll.

T. Neavei Turner. *Ann. Mag. N.H.* xx, No. 115, p. 13, ♂. 1917.

♂. 15–18 mm. Colour of the head and thorax like that of *observabilis*, but the tarsi and the hind tibiae inwardly are fusco-ferruginous. Mandibles piceous. Flagellum, excepting the last four joints, fusco-ferruginous below. Apical margins of the abdominal segments narrowly reddish brown below, widely so above, the second to fifth and the seventh almost entirely reddish brown above. Wings hyaline, with a narrow pale fuscous apical margin, the veins fusco-ferruginous. Pilosity and pubescence like that of *observabilis*, but the pilosity on the thorax is somewhat shorter, and the margins of the mesonotum have a short, adpressed and scanty pubescence in addition. The pubescence of the abdomen is a little darker than in *observabilis*, or brownish golden. The sculpture is like that of *observabilis*.

Anterior margin of the clypeus convex. Second joint of the flagellum one-fourth longer than the third, about two and a quarter times longer than the first. The third to seventh joints distinctly arcuate below. Interocular distance on the vertex not greater than the length of the first joint of the flagellum. The scutellum somewhat gibbous. Second sternite closely and finely punctured, more strongly in the middle than at the sides, the third and following sternites moderately shining and fairly coarsely punctured. Seventh tergite broad, the apex widely rounded, closely punctured, clothed with pale golden pubescence; eighth sternite very shallowly emarginate at the apex (type of the species) or transverse.

Third abscissa of the radius a little longer than the second, and about as long as the first.

Lualaba River. May (S.A. Neave); Victoria Falls, January. The two specimens from the latter locality differ from the type only in having the apex of the eighth sternite transverse, and in the third and following sternites slightly more shining.

T. velox Smith. *Cat. Hymen. Brit. Mus.* iv, p. 301. 1856. Turner, *loc. cit.* p. 13, ♀, ♂.

“♀. Closely resembles *T. basilica* with which it occurs; but the antennae are black; the abdominal segments are black, very narrowly brown on the apical margins, and the legs are black with the apical joints of the tarsi fusco-ferruginous. Eyes separated on the vertex by a distance equal to the length of the two basal joints of the flagellum; median segment less than two-thirds as long as the mesonotum; second sternite shining, with large scattered punctures.

♂. Eyes separated on the vertex by a distance slightly exceeding three-quarters of the length of the second joint of the flagellum; clypeus very broadly rounded at the apex. Apical tergites and sternites as in *basilica*. Second ventral segment finely and closely punctured. The pubescence of the abdomen is paler than in *observabilis*.

Hab. Gambia (Smith); N. Nigeria, Zungeru (J. W. Scott-Macfie) ♀.

The median segment is shorter than in *basilica* and *observabilis*, and the eyes are further apart on the vertex. The third and fourth joints of the flagellum are slightly arcuate beneath in the ♂."

To the description by Turner quoted above, the following notes, made by myself from an examination of the type and of the female in the British Museum collection, may be added.

♂ (type) 14.3 mm. Pubescence of face and clypeus, thorax and the declivous base of the first tergite, dirty white. Vertex coriaceous, not distinctly punctured. Ventral segments shining, sparsely punctured, the second more closely punctured and duller at the base, the fifth to eighth closely and finely punctured, the fifth and sixth fairly densely pubescent. Wings tinged with ochreous, the veins brown. In a specimen from N. Nigeria, the pubescence on the temples is silvery, and on the abdomen deep golden, quite as dark as in the other species of the group.

♀. 21.5 mm. (specimen from Zungeru). This ♀ has the apical margins of the sternites bright ferruginous. The second sternite is shining and coarsely punctured pre-apically like the rest, the last segment strongly punctured at the apex. The pubescence above is paler golden than in *observabilis*; the vertex is closely, finely and shallowly punctured. The basal joint of the anterior tarsus has six spines, as in the ♂. Galea much longer than the scape.

The ♂ has the third to fifth joints of the flagellum arcuate below, and the fourth to seventh have a narrow ferruginous streak below. The median segment or epinotum is slightly shorter than the scutellum and metanotum taken together; the last tergite and sternite are rounded apically.

T. perornata Turner. *Loc. cit.* p. 14, ♂.

"♂. Niger, mandibulis in medio, tegulis apice, calcaribus unguiculisque fusco-ferrugineis; alis subhyalinis, venis fuscis; capite albo-piloso, thorace griseo-piloso, segmentis abdominalibus apice anguste brunneis, segmentis dorsalibus dense aureo-pubescentibus; segmento ventrali octavo apice fortiter emarginato. Long. 16 mm."

"♂. Eyes separated on the vertex by a distance slightly exceeding three-quarters of the length of the second joint of the flagellum; clypeus broadly rounded at the apex; maxillary palpi six-jointed; labial palpi four-jointed, the two basal joints long and slender, the second about equal in length to the second joint of the flagellum, the first longer. Punctuation of the vertex indistinct. Median segment nearly twice as long as the scutellum. Second sternite shining and rather strongly punctured in the middle, much more finely and closely at the sides. Seventh tergite rather broad, subtruncate broadly at the apex; eighth sternite widely and rather deeply emarginate, the apical angles produced.

Hab. Uganda.... This is near *velox*, but has the seventh tergite broader, and the eighth sternite very different. The eyes are much further apart on the vertex than in *observabilis* or *Neavei*."

The apical angles of the eighth sternite, although produced, are blunted apically. The anterior tarsus has apparently six spines on the basal joint, but legs are turned inwards and not easily examined in the specimen in the B.M. coll.

T. basilica Guérin (*Lyrops basilicus*). *Iconogr. regn. anim.* VII, 440. 1844.

Turner, *loc. cit.* p. 11, ♀, ♂.

"♀. Nigra; abdomine brunneo-ferrugineo, infra nigro intaminato; segmentis dorsalibus aureo-pubescentibus, pygidio aureo pubescente; mandibulis, antennis, femoribus apice, tibiis tarsisque fusco-ferrugineis; tegulis brunneis; alis subhyalinis, venis fuscis, apice leviter infuscatis.

♂. Feminae similis. Long. ♀ 20 mm., ♂ 18 mm."

“♀. Clypeus broadly subtruncate at the apex. Eyes separated on the vertex by a distance not quite equal to the length of the second joint of the flagellum. Front clothed with silver-white pubescence. Thorax sparsely, median segment more thickly clothed with greyish pubescence; the punctures of the mesonotum minute and not distinctly separated; median segment nearly as long as the mesonotum, narrowed to the apex, with an ill-defined longitudinal sulcus. Second sternite subopaque, minutely and closely punctured, with a shining subtriangular space on the middle of the apical margin. Pygidial area triangular, narrowly rounded at the apex. Basal joint of fore tarsi with six spines. First and third abscissae of the radius subequal, each nearly twice as long as the second, and nearly half as long again as the space between the recurrent nervures on the cubitus. Third cubital cell on the cubitus extending a little beyond the apex of the radial cell.

♂. Eyes separated on the vertex by a distance not quite equal to half the length of the second joint of the flagellum; punctures of the second sternite distinctly larger than in the female; seventh tergite subtriangular, rounded at the apex.

Hab. Senegal and N. Nigeria.

This species is unlikely to occur in our region. The ♂ has six metatarsal spines. The mesonotum and pleurae are covered with a fairly dense and somewhat tomentose silvery pubescence. The galea is nearly twice as long as the scape. In the ♀ the bases of the abdominal segments are narrowly blackish. The inner face of the femora dark ferruginous. The pubescence on the mesonotum and pleurae of the sole ♀ example in the B.M. coll. is almost obsolete—possibly rubbed off.

T. mira Kohl. *Ann. K.K.N.H. Mus. Wien*, ix, 295, ♀. 1894.

♀. 20 mm. Except that the anterior metatarsus has six to seven spines, and the much shorter pygidial area, there is nothing to distinguish this form from *observabilis* ♀. The type is in Dr Brauns' collection, and was taken at Delagoa Bay.

Natalensis group. This group is characterised by the dark wings and black body, and contains the following species: *natalensis* Saussure; *nigropilosella* Cameron; *memnon* Turner and *moerens* Turner.

T. nigropilosella Cameron (Fig. 40). (*Liris*). *Ann. Transvaal Mus.* ii, 132. 1910. (*T. gigas*) Bischoff. *Arch. f. Naturges.* iii, 66, ♀. 1913.

♀. 23 mm. Black, apical joint of the flagellum rusty brown. Wings dark brown, with a strong steely-blue lustre, the veins black. Clypeus, face, lower surface of the scapes, anterior and middle femora, and basal half of the first tergite with a long, outstanding and black pilosity, longest and most dense on the sides of the thorax and on the epinotum, very short on the mesonotum, scutellum and metanotum. Abdomen with a very fine, adpressed and blackish pubescence, the sides and apical margins of the last three segments with a few long, outstanding, stiff, and black hairs. Legs densely pubescent, the pubescence black except on the inner sides of the posterior tibiae where it is rusty brown. Pygidial area with a coarse and dark reddish brown pubescence. Head dull, closely and finely punctured, the middle of the vertex more coarsely and more sparsely punctured. Mesonotum and scutellum closely and finely punctured and dull on the margins, more strongly and less closely punctured and slightly shining in the middle. Metanotum dull, finely punctured. Epinotum dull, the declivity transversely striate, the sides and outer halves of the dorsum closely rugulose, the inner part of the dorsum with large and small punctures intermixed. Dorsal surface of the abdomen slightly shining and very finely and closely punctured, the first two sternites also so, but dull, the remaining sternites shining, sparsely and fairly strongly punctured and with

a row of much larger punctures bordering the triangularly depressed apical margins.

Median area of clypeus trapezoidal, its anterior margin transverse and furnished with three short teeth on each side. Galea about as long as the scape. Second joint of the flagellum a little longer than the third, two and a half times longer than the first. The interocular distance on the vertex is equal to the combined length of the first and second joints of the flagellum. Temples well developed, seen from the side about half as wide as the eyes. Mesonotum with three longitudinal raised lines in front, which do not reach the middle of the segment. Dorsum of epinotum as long as the mesonotum and longer than its declivity, with a deeply impressed median longitudinal line which ends at the brow of the declivity in a small dentiform tubercle. Pygidial area a little longer than wide at the base, the apex rounded. Spines on the legs black, the anterior metatarsus with six short spines. Second and third abscissae of the radius subequal, each a little longer than the first, and about one-third longer than the space on the cubitus between the recurrent veins.

♂. 20 mm. Teeth on the clypeus smaller than in the ♀. All the sternites closely and fairly strongly punctured and dull. The apical sternite arcuately emarginate, the lateral angles subacute but not dentiform. Pygidium widely rounded at the apex. Otherwise like the ♀.

Bulawayo, Salisbury and Hope Fountain, S.R. December to February, Natal (R.M. coll.).

T. natalensis Saussure. *Mem. Soc. phys. et hist. nat. Genève*, XIV, 21, ♂. 1854.

Turner. *Ann. Mag. N.H.* xx, No. 115, p. 15, ♀, ♂. 1917.

♀. 15.2 mm. Black, last three joints of the anterior tarsi, and last joints of the middle and hind tarsi, ferruginous. Mandibles ferruginous in the middle. Tegulae brownish. Face and clypeus clothed with silvery pubescence. Head and thorax dull, finely and closely reticulate-punctate; the declivity of the epinotum transversely striate. Abdomen shining, almost glabrous, very finely but distinctly punctured above; all the sternites closely punctured at the sides, less closely in the middle, the median portion of the apical margins almost impunctate. Pygidial area subtriangular, narrowly truncate at the apex, a little longer than wide at the base, clothed with golden setae which change to blackish when viewed obliquely from the sides. Anterior margin of clypeus convex, with a row of large punctures behind it. Interocular distance on the vertex equal to a little more than the combined length of the first two joints of the flagellum. The second joint of the latter is barely longer than the third. Epinotum nearly as long as the mesonotum, the dorsum with a shallow impressed line over its apical fourth. Basal joint of the anterior tarsi with five spines.

♂. 14 mm. The interocular distance on the vertex is a little shorter than in the ♀. The seventh tergite is widely truncate at the apex, and the eighth sternite is arcuately emarginate, the lateral angles not dentiform. Otherwise like the ♀.

Durban, Natal. April.

T. memnon Turner. *Ann. Mag. N.H.* (8) xvii, 446, ♀. 1916.

"♀. Nigra; clypeo, fronte genisque aureo-pilosis; flagello articulis duobus basalibus scapoque ferrugineis; tibiis tarsisque anticis, femoribusque anticis apice brunneo-ferrugineis; alis nigris, caeruleo-tinctis; tegulis brunneis. Long. 18 mm."

"♀. Clypeus very broadly rounded at the apex, almost transverse, the apical margin narrowly transversely depressed, with two small teeth on each side, finely and rather closely punctured. Second joint of the flagellum as long as the first and third combined; eyes separated on the vertex by a

distance equal to the length of the second joint of the flagellum; an obscure longitudinal sulcus on the vertex behind the posterior ocelli. Pubescence of the thorax, median segment and abdomen, blackish; the median segment about half as long again as the scutellum, with a very obscure median line. Abdomen microscopically punctured, subopaque, the pubescence on the dorsal surface black, a little closer on the apical than on the basal portion of the segments. Sixth dorsal segment rather broadly rounded at the apex, clothed with stiff black hairs. Second ventral segment closely and evenly punctured, the apical margin almost smooth. Basal joint of the fore tarsus with five spines on the outer margin. Second abscissa of the radius shorter than the third, equal to the distance between the two recurrent nervures.

Hab. Mlanje, Nyasaland. April (S. A. Neave)."

The following additional notes are based on an examination of the type.

The golden pubescence present on the clypeus, face and temples is also present on the collar of the pronotum. The vertex is covered with brown hairs. The abdomen has a very short, greyish black pile, not unlike that of *Noto-gonidea sepulchralis*, but less conspicuous. The third to fifth sternites are much less punctured than in *natalensis*, especially in the middle basally. The clypeus has three teeth on each side, and not two as stated in Turner's description. The interocular distance on the vertex is equal to a little more than the length of the second joint of the flagellum, in fact, to the second plus half the first. The metatarsal spines are ferruginous, those on the other legs are black.

T. moerens Turner. *Ann. Mag. N.H.* xx, No. 115, p. 21, ♀. 1917.

"♀. Nigra, albo-pilosa; calcaribus spinisque tarsorum ferrugineis, fronte clypeoque albido-pilosus; segmentis dorsalibus 4 fascia apicali interrupta argenteo-pubescente, area pygidiali basi fusco, apice aureo-setosa; alis fuscis, venis nigris. Long. 17-20 mm."

"♀. Clypeus clothed with long silver hairs, which change to dull brown in some lights; the extreme apical margin narrowly depressed, subemarginate at the extreme apex, with three rather ill-defined teeth on each side. Lower part of the front clothed with long silver hairs as on the clypeus; vertex very distinctly and rather sparsely punctured. Eyes separated on the vertex by a distance equal to the combined length of the two basal joints of the flagellum; antennae short and stout. Thorax minutely and very closely punctured, the punctures distinctly separated, median segment more closely punctured, the pubescence cinereous. Abdomen shining, the dorsal surface closely and minutely punctured; the fifth segment more distinctly punctured, the apical margin arcuately depressed, with a few long fuscous hairs at the base of the depression. Second sternite rather sparsely and not very finely punctured, shining. Pygidial area clothed with fuscous setae, which change to reddish gold in some lights, especially at the apex; triangular, narrowly rounded at the apex. Basal joint of the fore tarsus with six spines. Third cubital cell extending distinctly beyond the apex of the radial cell; third abscissa of the radius a little longer than the second, but shorter than the first.

Hab. Nyasaland, Mlanje (S. A. Neave). December.

Superficially rather like *T. Marshalli* Turner, but the second sternite is much more closely and finely punctured, the silver pubescence on the abdomen is not nearly so extensive, and the third cubital cell is much longer on the cubitus. But *Marshalli* belongs to the group with elongate palpi."

The interrupted apical silvery bands on the abdominal segments distinguish this species from the others of the *natalensis* group, and the dark wings from species of other groups. The galea in this species is not longer than the scape.

EXPLANATION OF PLATE

PLATE V.

- Fig. 1. *Prosopigastra Neavei*, Turner. ♀. × ca 6.
Fig. 2. *Notogomidea croesus*, Smith. ♀. × 3.
Fig. 3. *Tachytes rhodesiana*, Bischoff. ♀. × 3.
Fig. 4. *Gastrosericus Braunsi*, Arnold. ♀. × 6.
Fig. 5. *Palarus Pentheri*, Brauns. ♀. × 3.
Fig. 6. *Tachysphex Panzeri*, v. *dolosus*, Arnold. ♀ head. × 6.
Fig. 7. *Liris diabolica*, Smith. ♀ head. × 4½.



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PART III

Issued March 24, 1923

PRINTED AT THE UNIVERSITY PRESS

CAMBRIDGE, ENGLAND

1923

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Curator of the Rhodesia Museum, Bulawayo

PART III

With 13 figures

Genus TACHYTES continued

AFTER an examination of all the material available, I am now in a position to furnish the key to the species which was omitted from the introduction to the genus in Part II of this work. Before proceeding to do this, it is necessary to state some of the conclusions which have been arrived at as a result of that examination.

First of all, these conclusions are only tentative since the paucity of material on which they are based does not justify any dogmatism. The total number of specimens of Tachytes which I have seen, exclusive of the British Museum's collection, does not exceed 180, and in no case in that number have I seen series of one species exceeding eight for either sex. Since this number represents the combined total of five different collections, it will be seen that it bears out the statement in the introductory paragraphs concerning the scarcity of these insects.

I can not help suspecting that if it were possible to breed a few species extensively in the laboratory, we should find that some of the characters which we now use for the differentiation of species would prove to be too variable to justify their use. However, since such a task would need the patience of a Fabre, we are thrown back on the use of such characters as appear to be most constant. These, placed in their order of value, I think are

1. The interocular distance on the vertex.
2. The length of the galea.
3. The density and colour of the pilosity and pubescence of the head, thorax and pygidial area in freshly emerged specimens.

4. The number of spines on the outer margin of the anterior metatarsus.
5. The sculpture of the mesonotum, scutellum and epinotum.
6. The puncturation of the sternites.
7. The length of the inner spur of the hind tibia.

On the other hand, some other characters are, I believe, quite unreliable, either on account of their variability within the species (*e.g.* venation), or on account of their uniformity within the genus (*e.g.* the relative proportions of the thoracic segments). These characters are: the venation, the shape of the clypeus, the sculpture of the vertex, the colour of the tarsi (within the groups), the proportions of the thorax and the shape of the last tergite and sternite in the ♂.

I am unable to assign any value to the form of the male genitalia, since it has been possible to examine them only in a few species, but from such examination I am inclined to think that the genitalia are too uniform in structure to afford much help in the diagnosis of species.

In the construction of the subjoined key to the species, I have derived considerable assistance from the one drawn up by Turner, on which, indeed, it is largely based. It is, however, far from being complete, since it does not cover quite a number of forms which I have had before me, but which owing to insufficiency of material or to defective condition it seemed unwise to describe.

KEY TO THE ETHIOPIAN SPECIES OF *TACHYTES* ♀♀.

- (2) 1. Mandibles feebly excised on the outer margin; epinotum subrectangular, not rounded posteriorly, the dorsum striated; abdomen wholly pale ferruginous (subg. *Holotachytes*). dichroa Smith
- (1) 2. Mandibles deeply excised on the outer margin; epinotum rounded posteriorly, the dorsum never distinctly striated.
- (8) 3. Maxillary palpi five-jointed, labial palpi three-jointed, long and slender. (subg. *Calotachytes*).
- (5) 4. First four tergites clothed with brilliant silver pubescence. Marshalli Turner
- (4) 5. Tergites densely clothed with golden pubescence, arranged in a chequered pattern.
- (7) 6. Wings dark fusco-hyaline. admirabilis Turner
- (6) 7. Wings hyaline, with a narrow and pale fuscous apical margin. Danaë Arnold
- (3) 8. Maxillary palpi six-jointed, labial palpi four-jointed (subg. *Tachytes*).
- (20) 9. Dorsal surface of abdomen densely clothed with bright golden pubescence, arranged more or less in a chequered pattern; head and thorax without golden pubescence.
- (13) 10. Galea shorter than the scape.
- (12) 11. Anterior metatarsi with six spines on the outer margins; stout species, abdomen conical. rhodesiana Bischoff
- (11) 12. Anterior metatarsi with five spines on the outer margins; slender species, abdomen oblongo-ovate. dilaticornis Turner
- (10) 13. Galea much longer than the scape.
- (15) 14. Abdomen, tibiae, tarsi and the greater part of the antennae and femora, brownish red. basilica Guérin
- (14) 15. Abdomen black, at the most only the apical margins of the segments brownish red.

- ¹ See explanatory note, page 144, part II.

- (55) 54. Apical halves of the first five abdominal segments flavo-testaceous; scapes below, legs and tegulae ochreous. **Turneri** Arnold
- (54) 55. Abdominal segments black.
- (57) 56. Interocular distance greater than the combined length of the first two joints of the flagellum; pubescence of pygidial area rufo-fuscous. **ugandensis** Turner
- (56) 57. Interocular distance not more than the combined length of the first two joints of the flagellum; pubescence of pygidial area golden or reddish golden.
- (59) 58. Pygidial area elongate and narrow, one and a half times longer than wide at the base; a small and slender species, 9 mm. long. **Kristenseni** Turner
- (58) 59. Pygidial area shorter; larger species, over 12 mm. long.
- (63) 60. Anterior metatarsus with five spines.
- (62) 61. Femora in greater part black; pubescent fasciae on the abdomen greyish silver; second joint of flagellum three and a quarter times longer than the first; 15 mm. long. **associata** Turner
- (61) 62. Femora black only at the extreme base, if at all; pubescent fasciae on the abdomen brownish golden; second joint of the flagellum little more than twice as long as the first; 13-14 mm. long. **tomentosa** Kohl
- (60) 63. Anterior metatarsus with six spines. **neglecta** Turner
- (47) 64. Tibiae and at least a portion of the tarsi black, the tibiae rarely fusco-ferruginous at the base.
- (70) 65. Tergites with dull golden, greyish golden or pale brassy pubescence.
- (67) 66. Abdominal pubescence greyish golden; 10 mm. long; pubescence of pygidial area orange golden. **lichtenburgensis** Arnold
- (66) 67. More than 10 mm. long.
- (69) 68. Anterior metatarsus with five spines; pubescence of pygidial area silvery; 13 mm. long. **bimetallica** Turner
- (68) 69. Anterior metatarsus with six spines; pubescence of pygidial area fusco-ferruginous; 15 mm. long. **aurichalcea** Kohl
- (65) 70. Pubescence of the tergites silvery, greyish or white.
- (72) 71. Mesonotum and scutellum distinctly punctate-rugulose, the dorsum of the epinotum strongly so. **notabilis** Turner
- (71) 72. Mesonotum and scutellum finely punctured only.
- (76) 73. Interocular distance greater than the combined length of the first and second joints of the flagellum, but equal to that of the second and third, or nearly.
- (75) 74. Inner calcar of hind tibia shorter than the basal joint of the hind tarsus. **argenteovestita** Cameron
- (74) 75. Inner calcar of hind tibia as long as the basal joint of the hind tarsus. **transvaalensis** Cameron
- (73) 76. Interocular distance not greater than the combined length of the first and second joints of the flagellum.
- (94) 77. Interocular distance equal to the combined length of the first and second joints of the flagellum, or very nearly so.
- (83) 78. Second and third sternites dull, very closely and microscopically punctured.
- (80) 79. Wings short, not reaching the apex of the abdomen (pygidial area covered with dull reddish golden pubescence). **erynnis** Turner
- (79) 80. Wings reaching the apex of the abdomen.
- (82) 81. Pygidial area covered with coarse and dark reddish pubescence. **inexorabilis** Turner
- (81) 82. Pygidial area covered with fine and pale golden pubescence. **hirsuta** Smith
- (78) 83. Third sternite shining and sparsely punctured.
- (85) 84. Tergites covered with a dense and ashy-silvery pubescence arranged in

- a chequered pattern (anterior metatarsus with five spines; pubescence of pygidial area silvery). **Distanti** Turner
- (84) 85. Pubescence on the tergites dense only on the apical margins, not distinctly chequered.
- (87) 86. Second and third sternites shining, coarsely and sparsely punctured (vertex rugosely punctured, thorax with dense fulvous pubescence, 16-18 mm. long). **versatilis** Turner
- (86) 87. Second sternite dull, closely and finely punctured, the third shining and if closely punctured, then only so on the apical margin.
- (89) 88. Anterior metatarsus with six spines; abdominal pubescence with a slightly golden tint. **lachesis** Turner
- (88) 89. Anterior metatarsus with five spines.
- (91) 90. Wings distinctly flavo-hyaline basally, very pale fusco-hyaline apically (pygidial pubescence pale golden). **Braunsi** Turner
- (90) 91. Wings hyaline, at the most only slightly tinted with flavous at the base (pygidial pubescence darker).
- (93) 92. 12-14 mm. long. **instabilis** Turner
- (92) 93. 9-10 mm. long. **Silverlocki** Turner
- (77) 94. Interocular distance not greater than the length of the second joint of the flagellum.
- (96) 95. Pubescence and pilosity of thorax yellowish; pubescence of the pygidial area orange golden. **confusa** Arnold
- (95) 96. Pubescence of thorax whitish or silvery.
- (98) 97. Pubescence of the pygidial area dark fulvous. **pulchricornis** Turner
- (97) 98. Pubescence of the pygidial area fusco-ferruginous. **megaera** Turner

KEY TO THE ♂♂.

- (2) 1. Mandibles feebly excised on the outer margin; epinotum subrectangular, not rounded behind, the dorsum striated; abdomen wholly light ferruginous (subg. *Holotachytes*). **dichroa** Smith
- (1) 2. Mandibles deeply excised on the outer margin; epinotum rounded behind, never distinctly striated on the dorsum.
- (8) 3. Maxillary palpi five-jointed, labial palpi three-jointed, long and slender. (subg. *Calotachytes*).
- (5) 4. First four tergites clothed with brilliant silver pubescence; eighth sternite subtruncate, the apical angles not produced. **Marshalli** Turner
- (4) 5. Tergites densely clothed with golden pubescence, arranged in a chequered pattern.
- (7) 6. Seventh tergite broadly rounded; wings subhyaline with a pale fuscous apical border. **Danaë** Arnold
- (6) 7. Seventh tergite truncate at the apex; wings strongly infusate. **admirabilis** Turner
- (3) 8. Maxillary palpi six-jointed, labial palpi four-jointed (subg. *Tachytes*).
- (22) 9. Dorsal surface of abdomen densely clothed with bright golden pubescence (dark golden in *dilaticornis*), arranged more or less in a chequered pattern; head and thorax entirely without golden pubescence.
- (13) 10. Galea shorter than the scape.
- (12) 11. Second to seventh joints of the flagellum strongly arcuately dilated beneath; wings flavo-hyaline, pale fusco-hyaline apically. **dilaticornis** Turner
- (11) 12. Joints of flagellum normal; wings hyaline. **rhodesiana** Bischoff
- (10) 13. Galea much longer than the scape.
- (19) 14. Interocular distance not exceeding half the length of the second joint of the flagellum.

- (16) 15. Abdomen pale ferruginous except at the base¹, the greater part of the antennae and legs reddish brown. *basilica* Guérin
- (15) 16. Abdomen black, only the apical margins of the segments ferruginous.
- (18) 17. Third to seventh joints of the flagellum distinctly arcuately dilated beneath. *Neavei* Turner
- (17) 18. Joints of the flagellum simple. *observabilis* Kohl
- (14) 19. Interocular distance slightly exceeding three-quarters of the length of the second joint of the flagellum.
- (21) 20. Eighth sternite truncate, almost rounded, the apical angles not produced; third to fifth joints of the flagellum arcuately dilated beneath, the fourth to seventh with a narrow ferruginous streak below. *velox* Smith
- (20) 21. Eighth sternite arcuately emarginate, the apical angles acute. *perornata* Turner
- (9) 22. Abdomen without bright golden pubescence, in some species with brassy or dull golden pubescence, but not arranged in a conspicuously chequered pattern.
- (26) 23. Wings black, flushed with steel blue or violet; abdomen black without pubescent fasciae.
- (25) 24. All the pubescence and pilosity black. *nigropilosella* Cameron
- (24) 25. Face and clypeus with silvery pubescence. *natalensis* Saussure
- (23) 26. Wings not dark brown or black.
- (28) 27. Abdomen black, without pubescent fasciae. *nudiventris* Turner
- (27) 28. Abdomen with pubescent fasciae, sometimes rather inconspicuous.
- (32) 29. At least the first and second abdominal segments red.
- (31) 30. First, second and basal half of the third abdominal segments red; posterior tibiae ferruginous. *Sjöstedti*, race *karrooensis* Arnold
- (30) 31. Third abdominal segment not red at the base, posterior tibiae blackish. *ambidens* Kohl
- (29) 32. Basal abdominal segments black, or at least not red.
- (34) 33. Prothorax, mesonotum in front, scutellum, postscutellum and last two abdominal segments brownish red. *rufiscutis* Turner
- (33) 34. Thorax entirely black.
- (40) 35. Galea very long, more than twice as long as the scape.
- (37) 36. All the tibiae and tarsi fulvo-ferruginous. *Hamiltoni* Turner
- (36) 37. At least the middle and hind tibiae and tarsi black.
- (39) 38. Fore tibiae and tarsi ferruginous. *praestabilis* Turner
- (38) 39. Fore tibiae and tarsi black. *labilis* Turner
- (35) 40. Galea less than twice as long as the scape, often shorter.
- (62) 41. Tibiae and tarsi wholly red or yellowish red.
- (47) 42. Galea about half as long again as the scape (interocular distance less than half the length of the second joint of the flagellum).
- (44) 43. Anterior metatarsus with six spines. *separabilis* Turner
- (43) 44. Anterior metatarsus with five spines.
- (46) 45. Clypeus angularly excised in the middle of the anterior margin; 15 mm. long. *cataractae* Arnold
- (45) 46. Anterior margin of clypeus not excised in the middle; 11 mm. long. *irritabilis* Turner
- (42) 47. Galea as long as, or shorter than, the scape; if longer (*neglecta*), then not more than a quarter so.
- (53) 48. Interocular distance about equal to the length of the first joint of the flagellum.
- (52) 49. Second sternite shining, sparsely punctured; abdominal fasciae silvery.

¹ On the dorsal surface the colour of the integument is somewhat obscured by the pubescence, but it is quite apparent on the ventral surface.

- (51) 50. Eighth sternite truncate at the apex, the apical angles rounded; 18 mm. long.
testaceinerva Cameron
- (50) 51. Eighth sternite widely and very shallowly emarginate at the apex; 21.5 mm. long.
exclusa Turner
- (49) 52. Second sternite closely and minutely punctured; abdominal fasciae brownish golden grey.
tomentosa Kohl
- (48) 53. Interocular distance equal to at least twice the length of the first joint of the flagellum.
- (55) 54. Eighth sternite bisinuate at the apex, the apical angles rounded.
associata Turner
- (54) 55. Eighth sternite not bisinuate at the apex.
- (57) 56. Second to seventh joints of the flagellum pale ferruginous beneath (eighth sternite rounded at the apex, anterior metatarsus with four spines).
Turneri Arnold
- (56) 57. Joints of the flagellum black.
- (59) 58. Interocular distance equal to the combined length of the second and third joints of the flagellum.
ugandensis Turner
- (58) 59. Interocular distance less than, or only slightly greater than, the length of the second joint of the flagellum.
- (61) 60. Interocular distance very nearly equal to the length of the second joint of the flagellum.
opposita Turner
- (60) 61. Interocular distance equal to slightly more than the length of the second joint of the flagellum.
neglecta Turner
- (41) 62. Tibiae and at least a portion of the tarsi black; the tibiae rarely fusco-ferruginous at the base.
- (66) 63. Tergites with dull brownish golden pubescence.
- (65) 64. Interocular distance less than the length of the second joint of the flagellum; anterior metatarsus with six spines, eighth sternite shallowly emarginate.
aurichalcea Kohl
- (64) 65. Interocular distance as great as the length of the second joint of the flagellum; anterior metatarsus with five spines, eighth sternite rounded.
volubilis Turner
- (63) 66. Tergites with silvery or whitish pubescence.
- (68) 67. Middle joints of flagellum marked at least beneath with dull ochreous.
pulchricornis Turner
- (67) 68. Joints of flagellum black.
- (72) 69. Interocular distance greater than the combined length of the first and second joints of the flagellum, about equal to that of the second and third.
- (71) 70. Small species, 8 mm. long; pubescence of face and clypeus pale golden; galea shorter than the scape; anterior metatarsus with three spines.
glabriuscula Arnold
- (70) 71. Larger species, 12.5 mm. long; pubescence of face and clypeus silvery; galea as long as the scape; anterior metatarsus with four spines.
punctuosa Arnold
- (69) 72. Interocular distance distinctly less than the combined length of the second and third joints of the flagellum.
- (86) 73. Interocular distance equal to the length of the first and second joints of the flagellum, or (*lichtenburgensis*) very slightly greater.
- (75) 74. Thorax punctured rugulose, dorsum of epinotum strongly so.
notabilis Turner
- (74) 75. Thorax very finely and closely punctured.
- (81) 76. Anterior metatarsus with six or more spines.
- (78) 77. Anterior metatarsus with eight spines; eighth sternite broadly rounded.
habilis Turner
- (77) 78. Anterior metatarsus with six spines; eighth sternite emarginate.
- (80) 79. Second to fourth sternites moderately shining, shallowly and not closely punctured; costa dark brown.
inexorabilis Turner

- (79) 80. Second to fourth sternites dull, closely and evenly punctured; costa ochreous. *hirsuta* Smith
- (76) 81. Anterior metatarsus with four spines.
- (83) 82. Small species, 8.5 mm. long. *lichtenburgensis* Arnold
- (82) 83. Larger species, 11 mm. long.
- (85) 84. Vertex with distinct and scattered punctures; eighth sternite broad. *instabilis* Turner
- (84) 85. Vertex microscopically punctured; eighth sternite very narrow. *disputabilis* Turner
- (73) 86. Interocular distance less than the combined length of the first and second joints of the flagellum.
- (90) 87. With five (or six?) spines on the anterior metatarsus.
- (89) 88. Interocular distance scarcely more than half the length of the second joint of the flagellum; pubescence of the face and clypeus silvery. *erynnis* Turner
- (88) 89. Interocular distance a little more than the length of the second joint of the flagellum; pubescence of the face and clypeus golden. *versatilis* Turner
- (87) 90. Anterior metatarsus with four spines.
- (92) 91. Wings flavo-hyaline basally, very pale fusco-hyaline apically; eighth sternite truncate at the apex, the angles not produced. *Braunsi* Turner
- (91) 92. Wings hyaline, slightly flavo-hyaline at the base; eighth sternite deeply and angularly emarginate. *melancholica* Arnold

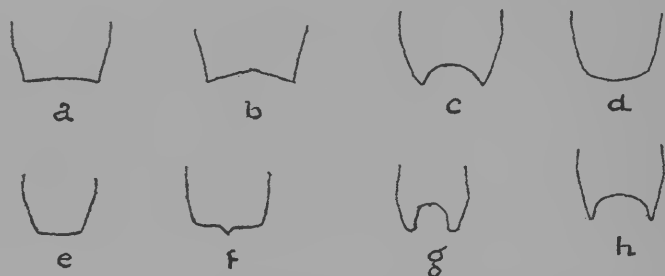


Fig. 41. Eighth sternites. (a) *T. observabilis*, (b) *T. Neavei*, (c) *T. perornata*, (d) *T. velox*, (e) *T. testaceinerva*, (f) *T. associata*, (g) *T. ugandensis*, (h) *T. pulchricornis*.

T. nudiventris Turner. *Ann. Mag. N.H.* xx (8), No. 115, p. 25, ♀, ♂. 1917.

“♀. Nigra; fronte clypeoque pallide fulvo-pilosis; thorace segmentoquo mediano sparse griseo-pilosis; abdomine nudo, nitido; alis hyalinis, flavo suffusus, venis fuscis; area pygidiali nigro-setosa; palpis testaceis.

♂. Feminae simillimus. Long. ♀ 15 mm., ♂ 14 mm.”

“♀. Clypeus finely and closely punctured, broadly rounded at the apex. Eyes separated on the vertex by a distance equal to the combined length of the first and second joints of the flagellum. Thorax and median segment opaque, very finely and closely punctured, rather more sparsely on the scutellum than elsewhere; the median segment as long as the scutellum and postscutellum combined, rounded at the posterior angles, very steeply sloped posteriorly, with a narrow and shallow median sulcus broadening on the apical third and continued more deeply on the apical truncation. Abdomen shining, minutely punctured, the segments without apical bands of pubescence; second sternite closely and minutely punctured, with an arched row of large punctures before the apex. Pygidial area broad at the base, narrowly rounded at the apex,

subtriangular, clothed with black setae. Basal joint of the fore tarsi with six short and stout spines."

"♂. Seventh tergite small, rather narrowly rounded at the apex; eighth sternite about half as long again as broad, narrowly and not very deeply incised at the apex. Galea rather short and broad, not rostrate."

Hab. Uganda.

The vertex in this species is irregularly and fairly sharply punctured. The abdomen, although without pubescent bands, has a sparse and microscopic pubescence. The ♂ has six spines on the anterior metatarsus as in the ♀. I do not think that this species is likely to be found within our subregion.

T. Sjöstedi Cameron. Sjöstedt, *Kilimandjaro-Meru Exped.* II, p. 284.

"Black, the basal three abdominal segments red, the apical four joints of the anterior, and the apical two of the posterior tarsi of a darker red colour; wings hyaline, the costa and nervures testaceous, the second abscissa of the radius almost one-fourth longer than the third, longer than the space bounded by the recurrent nervures, the apical of which is received in the cellule. The pubescence is silvery, the head and thorax being also covered densely with white hair, which is longer and denser on the epinotum; on the abdominal segments the depressed silvery pubescence forms apical bands. The pubescence on the outer side of the hind tibiae is golden; the spines are whitish, the calcaria pale fulvous. Pygidium covered with dark reddish golden pile. ♀, length 15 mm.

Meru lowlands, Ngare na nyuka.

Eyes separated above by the length of the third antennal joint; a curved furrow with raised sides runs from either side of the posterior ocelli; the two forming a horseshoe-shaped area."

T. Sjöstedi, race *formosa* n. subsp.

♀, 13 mm. Head, thorax and legs black, the last four joints of the anterior tarsi ferruginous, the two basal joints of the middle and hind tarsi brown, the rest ferruginous. First three tergites pale yellowish red, the second and third slightly clouded with black in the middle, the first and second sternites pale yellowish red, the third and following sternites and the fourth to sixth tergites piceous, all the segments with pale flavous apical margins. Face and temples with whitish or silvery pubescence; thorax with a pale yellowish white decumbent pubescence intermixed with white and outstanding pilosity, longer and denser on the epinotum than elsewhere. Middle and hind tibiae and the pygidial area with a pale golden pubescence. Spines on the legs yellowish white. Wings hyaline, the veins reddish yellow. Head and thorax microscopically reticulate-punctate and dull, the declivity of the epinotum closely and transversely striolate. Third to fifth sternites slightly shining, smooth, with a few large pre-apical punctures. Anterior margin of the clypeus convex and entire. Galea a little shorter than the scape. Interocular distance on the vertex equal to the length of the second joint of the flagellum. Pygidial area elongate-triangular, subacute at the apex. Anterior metatarsi with five spines on the outer margin.

Essexvale, S.R. April. Type in the R.M. coll.

T. Sjöstedi, race *karrooensis*, n.r.

♀, 12 mm. long. This form differs from the preceding only in the slightly smaller size, in the colour of the third tergite which is entirely yellowish red like the first and second, and by the greater interocular distance, which is equal to the combined length of the first two joints of the flagellum. The apex of the pygidium is also slightly less acute.

♂, 10 mm. long. The hind and middle tibiae at the apex, the posterior tibiae and all the tarsi, ferruginous. The pygidial pubescence is silvery. The interocular distance on the vertex is the same as in the ♀. The sculpture of the thorax is stronger than in that sex, especially the dorsum of the epinotum which is almost punctate-rugulose. The seventh tergite widely rounded, the eighth sternite wide, arcuately emarginate, the apical angles produced into short teeth. Anterior metatarsus with five spines, as in the ♀.

Willowmore, C.P. (Dr H. Brauns).

T. ambidens Kohl. *Verh. Zool. Bot. Ges. Wien*, xxxiv, p. 343, ♀. 1884.

Turner identifies a ♂ and ♀ in the Brit. Mus. coll. from South-west Abyssinia with this species, which was originally recorded from South-east Russia. It is not likely to occur within our limits. Only the two basal abdominal segments are red, and the ♀ differs from *Sjöstedti* also in the structure of the clypeus, which has a short longitudinal carina on each side near the middle of the apical margin, the carinae being continued forwards into short teeth which project beyond the margin. The interocular distance is equal to the length of the first and second joints of the flagellum. ♀ 11 mm. long, ♂ 9 mm. The clypeus in the ♂ lacks the carinae and teeth.

Praestabilis group. This group is composed of four species characterised by the great length of the galea, which is more than twice as long as the scape. With the exception of *labilis*, they appear to be confined to the tropical Ethiopian region.

T. labilis Turner. *Loc. cit.* p. 17, ♀, ♂.

♀, 18 mm. long. Black; the three last joints of the tarsi beneath and the calcaria fusco-ferruginous, the spines on the legs ferruginous. Face and clypeus with greyish silvery pubescence. Pubescence and pilosity of the thorax reddish ochreous, the pubescence a shade darker. The first four tergites with wide apical transverse bands of greyish silvery pubescence. The pygidial area covered with coarse fusco-ferruginous pubescence. Wings hyaline, faintly tinged with ochreous and slightly infuscate apically, the veins pale brown.

Clypeus closely and finely punctured, also with a few large punctures intermixed, the median area with three small teeth on each side. Interocular distance on the vertex nearly equal to the combined length of the first and second joints of the flagellum. Galea as long as the scape and the first joint plus three-quarters of the second joint of the flagellum. Second sternite closely and finely punctured. Anterior metatarsus with five long spines.

♂, 15 mm. long. Interocular distance on the vertex as in the ♀. Seventh dorsal segment broadly rounded at the apex, not truncate. Eighth sternite shallowly emarginate at the apex, the apical teeth blunt.

Hab. Mlanje, Nyasaland. December to February. Type in the B.M. coll.

T. praestabilis Turner. *Loc. cit.* p. 16, ♀, ♂.

♀, 15-16 mm. long. Very much like *labilis* from which it differs as follows. Pubescence of face and clypeus golden. Pubescence and pilosity of thorax less reddish. Pubescence of the abdomen brighter. The front tibiae and tarsi are ferruginous. Median area of the clypeus with one tooth on each side. Interocular distance on the vertex equal to a little more than the length of the second joint of the flagellum. Anterior metatarsus with six spines. Pygidial area a little more acute than in *labilis*.

♂, 13 mm. long. Seventh tergite broadly truncate at the apex; eighth sternite widely and shallowly emarginate, the apical angles acute and denticiform. Otherwise like the ♀. The eighth sternite is wider than in *labilis*.

Uganda. December. Type in the B.M. coll.

T. Hamiltoni Turner. *Loc. cit.* p. 17, ♂.

♂, 15 mm. long. Black; mandibles at the base, the apices of the femora, the tibiae and tarsi pale ferruginous. Wings flavo-hyaline, costa and veins pale ferruginous. Face and clypeus with golden pubescence. Pubescence of the thorax pale golden, the pilosity pale yellowish. The first five tergites with apical bands of silver pubescence, the pygidium with reddish golden pubescence. Clypeus very shallowly emarginate in the middle of the anterior margin, and with three small teeth on each side. Interocular distance on the vertex equal to the length of the second joint of the flagellum. Sternites finely and evenly, but not very closely punctured. Seventh tergite widely truncate at the apex, the eighth sternite widely and shallowly emarginate, the apical angles subdentiform. Anterior metatarsus with six spines on the outer margin.

Hab. British East Africa. April. Type in the B.M. coll.

T. simulatrix Turner. *Loc. cit.* p. 18, ♀.

♀, 16 mm. long. Black; the apex of the scape below, the mandibles at the base, the apical half of the femora, tibiae, tarsi and tegulae reddish ochreous. Face and clypeus with pale golden pubescence. Pubescence of the thorax dull ochreous golden. The first four tergites with apical bands of silvery pubescence. Pygidial area clothed with coarse brownish red pubescence. Wings flavo-hyaline, the veins ferruginous.

Vertex sparsely and not very finely punctured. Second sternite dull, closely and very finely punctured. Galea very long and narrow, three times as long as the scape. Interocular distance on the vertex equal to or barely exceeding the length of the second joint of the flagellum. Second sternite dull, microscopically and closely punctured; pygidial area rounded at the apex. Anterior metatarsus with six spines.

Hab. S. Nigeria. May. Type in the B.M. coll.

T. rufiscutis Turner. *Ann. Mag. N.H.* 1 (9), 1, p. 95, ♂. 1918.

“♂. Niger; palpis, galea, mandibulis dimidio basali, clypeo, antennis, prothorace pedibusque ferrugineis; mesonoto antice, scutello postscutelloque fusco-ferrugineis; tegulis testaceis; segmentis duobus apicalibus rufo-brunneis; alis flavo-hyalinis, venis ferrugineis. Long. 18 mm.”

“♂. Galea scarcely longer than the scape, a little longer than its basal breadth; palpi not elongate. Head covered with whitish hairs, changing to pale golden on the clypeus. Vertex opaque, very finely punctured; eyes separated on the vertex by a distance scarcely equal to half the length of the second joint of the flagellum. Antennae stout, the joints not arcuate beneath. Thorax opaque finely and very closely punctured; median segment twice as long as the scutellum, without a distinct median sulcus, but with a strong apical fovea, the posterior slope with a strong median sulcus. Abdomen closely and minutely punctured, rather sparsely clothed with very short silver-grey pubescence, which does not form apical fasciae; second sternite very minutely and closely punctured on the sides, much more strongly and rather sparsely in the middle; the third and following sternites very sparsely and deeply punctured in the middle. Seventh tergite elongate triangular, rather narrowly rounded at the apex, densely clothed with coarse reddish-gold pubescence. Eighth sternite rather narrowly truncate at the apex, the angles not produced. First recurrent nervure interstitial with the first transverse cubital nervure, second received just before the middle of the second cubital cell; third abscissa of the radius nearly twice as long as the second and about equal to the first. Six spines on the basal joint of the fore tarsus.”

An examination of the type shows that the galea is about one-third longer than the scape.

T. aurichalcea Kohl. *Ann. Soc. Ent. Belg.* xxxv, p. 15, ♀. 1891.

♀, 15 mm. long. Black; tarsi fusco-ferruginous towards the apex; tegulae testaceous; wings hyaline, the veins testaceous. Face, clypeus and temples covered with silvery pubescence, becoming pale golden above on the temples. Thorax with a dense golden pubescence underlying the yellow pilosity. First tergite and apical halves of the other tergites clothed with brownish golden pubescence, the pygidial area with fusco-ferruginous pubescence. Vertex finely and sparsely punctured. Thorax very finely and closely punctured. Second and third sternites dull, very finely and closely punctured. Clypeus with three short blunt teeth on each side of the anterior margin. The interocular distance on the vertex equal to very little more than the length of the second joint of the flagellum. Galea as long as the scape. Anterior metatarsi with six spines on the outer margin.

♂, 14 mm. long. Interocular distance on the vertex less than the length of the second joint of the flagellum, about equal to twice the length of the first. Seventh tergite widely rounded at the apex; eighth sternite shallowly emarginate in the middle, the apical angles not dentiform. All the sternites moderately shining, the first three shallowly and sparsely, the fourth to sixth densely and sharply punctured.

Widely distributed, recorded from Nigeria, Congo and Rhodesia.

T. bimetallica Turner. *Ann. Mag. N.H.* xx (8), No. 115, p. 21, ♀. 1917.

“♀. Nigra; tarsi ferrugineis, articulo basali infusato; calcaribus ferrugineis; tegulis segmentisque abdominalibus margine apicali brunneo-testaceis; alis hyalinis, venis testaceis; clypeo, fronte, pygidioque argenteo-pubescentibus; thorace cinereo-hirsuto; segmentis dorsalibus 1-5 pallide aureo-pubescentibus. Long. 13 mm.”

“♀. Clypeus subtruncate at the apex, with three minute teeth on each side. Vertex very minutely and closely punctured; eyes separated on the vertex by a distance equal to the combined length of the two basal joints of the flagellum. Median segment scarcely half as long again as the scutellum, with a distinct longitudinal sulcus on the dorsal surface. Basal joint of fore tarsus with five spines; spur of hind tibia as long as the basal joint of the hind tarsus. Pygidial area triangular, narrowly rounded at the apex. Third and fourth sternites shining and sparsely punctured in the middle.

Hab. Cape, Hex River (South African Museum). January.

Nearly allied to *aurichalcea*, but differs in the colour of the pubescence on the thorax and pygidial area, and in the number of spines on the fore metatarsus.”

T. volubilis Turner. *Loc. cit.* p. 24, ♂.

♂, 12 mm. long. Black; apical margins of the abdominal segments fusco-ferruginous. Spines on the legs ferruginous. Face and clypeus with dull silvery pubescence. Thorax with a scanty and dull golden pubescence, the pilosity yellowish. Abdomen with brownish golden pubescence, forming distinct apical fasciae. Pygidium with pale golden pubescence. Interocular distance on the vertex equal to the length of the second joint of the flagellum. Second, third and fourth joints of the flagellum moderately dilated beneath. Abdomen slender; the second sternite dull, finely and closely punctured; seventh tergite long, rounded at the apex; eighth sternite rounded at the apex. Anterior metatarsus with five spines.

British East Africa and Portuguese East Africa (Neave). Type in the B.M. coll.

T. dilaticornis Turner (Fig. 42). *Loc. cit.* p. 23, ♀, ♂.

♀, 14 mm. long. Black. Wings flavo-hyaline, widely infusate at the apex. Clypeus, face and temples with silvery pubescence, tinged with golden. The thorax in front and at the sides has a thin, decumbent and golden pubescence, underlying the sparse and pale yellowish pilosity. Pubescence of abdomen pale golden, denser on the apical margins, where it forms transverse fasciae. Pygidial area with a reddish golden pubescence. Thorax closely reticulate-punctate, the dorsum of the epinotum finely and closely reticulate, the declivity feebly and transversely striate. Abdomen microscopically and closely punctate above; the first and second sternites dull, closely and finely punctured, the following sternites shining, coarsely and sparsely punctured basally, finely and closely so apically. The apical margins of the abdominal segments brown. Vertex distinctly punctured. Interocular distance on the vertex equal to the length of the second joint of the flagellum. Abdomen slender, oblongo-ovate. Pygidial area elongate-triangular, narrowly rounded at the apex. Anterior metatarsus with five spines.



Fig. 42. Antenna of *T. dilaticornis*, ♂.

♂, 14 mm. long. Vertex distinctly punctured. Interocular distance on the vertex equal to a little less than the length of the third joint of the flagellum; seventh tergite truncate at the apex; eighth sternite subtruncate at the apex. Second to seventh joints of the flagellum strongly arcuately dilated beneath. Otherwise like the ♀.

Measurements of the types in the B.M. coll. show that Turner's description is incorrect in regard to the interocular distance.

Hab. British East Africa; Pinetown, Natal (G. F. Leigh). T.M. coll. ♂.

The latter specimen differs slightly from the type of the ♂ in having the joints of the flagellum less strongly arcuate and in the last four joints of the flagellum being fusco-ferruginous beneath. (T.M. coll.)

T. lichtenburgensis, n.sp.

♀, 10 mm. long. Black; mandibles piceous, last three joints of all the tarsi ferruginous, the two basal joints more or less fusco-ferruginous. The apical margins of the abdominal segments fusco-testaceous. Spines on the legs yellowish white, the calcaria flavous. Head, thorax and legs with brassy golden pubescence, somewhat paler or silvery on the sides of the mesonotum and the posterior tibiae. Abdomen clothed with a pale brassy golden pubescence, appearing brownish yellow in some lights, denser on the apical margins of the segments, where it forms wide transverse fasciae. Pygidial area clothed with a dense and deep golden pubescence. Head and thorax very closely and finely punctured, the sides of the epinotum almost smooth, the declivity closely and transversely striolate. First and second sternites dull and closely punctured, the rest shining, sparsely and coarsely punctured. Anterior margin of the clypeus convex, with two small blunt teeth on each side of the median area. Interocular distance on the vertex equal to a little more than the length of the first two joints of the flagellum. Dorsum of the epinotum short, not longer than the scutellum and metanotum combined. Pygidial area longer than wide at the base, narrowly rounded at the apex. Inner calcar of the hind tibia longer than the basal joint of the hind tarsus. Anterior metatarsus with five spines. Wings hyaline, the veins fusco-flavous.

The mouth parts in the type have been damaged and it is not possible to state the length of the galea.

♂, 8.5 mm. Pilosity and pubescence paler than in the ♀, on the abdomen

almost silvery, the pygidium covered with yellowish silver hairs. Anterior metatarsus with four spines. Galea as long as the scape. Otherwise like the ♀. Lichtenburg, Transvaal (Dr H. Brauns). Types in R.M. coll.

T. separabilis Turner. *Loc. cit.* p. 27, ♀, ♂.

♀, 16 mm. long. Black; mandibles at the base, the scapes below, tegulae, apical halves of the femora and nearly the whole of the hind ones, tibiae and tarsi, ferruginous. Wings flavo-hyaline, the veins ferruginous. Face and clypeus with pale golden pubescence. Thorax with pale golden pubescence, not dense except at the sides, and with reddish yellow pilosity. First four tergites with wide apical fasciae of silvery pubescence; the pygidial area with golden pubescence. Galea half as long again as the scape. Interocular distance on the vertex not quite equal to the length of the second joint of the flagellum. Second sternite dull, very finely and closely punctured. Pygidial area triangular, widely rounded at the apex. Anterior metatarsus with six spines; inner calcar of hind tibia as long as the basal joint of the hind tarsus.

♂, 15 mm. long. Interocular distance on the vertex less than the length of the second joint of the flagellum. Seventh tergite widely truncate at the apex; eighth sternite emarginate, the apical angles bluntly dentiform.

Hab. Transvaal, Zululand, East Africa and Gold Coast.

In a specimen from Waterberg, Transvaal (T.M. coll.) which I identify with this species there are three teeth on each side of the clypeus.

T. exclusa Turner. *Ann. Mag. N.H.* xx (8), No. 118, p. 290, ♀, ♂. 1917.

♀, 23 mm. long. Although very much larger, this species is, I think, very closely allied to *separabilis*, from which it differs only in the following features.

Anterior half of the clypeus and the antennae ferruginous. Pygidial area clothed with coarse fusco-ferruginous pubescence, and broadly rounded at the apex. Second to fourth sternites shining, with large scattered punctures. Inner calcar of hind tibia longer than the basal joint of the hind tarsus. Vertex minutely and closely punctured, with a low carina extending from the occiput and not reaching the ocellar area.

♂, 22 mm. Interocular distance on the vertex hardly equal to the length of the first joint of the flagellum. Seventh dorsal segment broadly rounded at the apex; eighth sternite very feebly emarginate, the apical angles not produced. Sternites shining and more closely and finely punctured than in the ♀.

Hab. Yapi, Gold Coast.

Turner remarks of this species, "This is near *testaceinerva* Cam., differing in the much sparser pubescence of the thorax and median segment, in the distinctly longer galea, in the presence of a carina on the vertex of the female, in the broader pygidial area, and in the distinctly sparser punctures of the sternites; the seventh tergite of the male is also much broader."

T. testaceinerva Cameron (Fig. 41 e). Sjöstedt, *Kilimandjaro-Meru Exped.* II, p. 283, ♀. 1910.

♀, 17-20 mm. long. Black; the base of the mandibles, the scapes in front, tegulae, apices of the femora, tibiae and tarsi, ferruginous. Face, clypeus and tibiae with reddish golden pubescence. Thorax with similar pubescence, somewhat scanty on the middle of the mesonotum. The first four tergites with wide apical transverse fasciae of ashy silver pubescence. The pygidial area clothed with reddish setae. Wings flavo-hyaline. Median area of clypeus with three teeth on each side of the anterior margin. Vertex with sparse and sharp punctures. Interocular distance on the vertex a little less than the length of the second joint of the flagellum, but equal to that of the third. Second

sternite shining, sparsely and deeply punctured, with a smooth triangular area on the middle of the apical margin. Pygidial area broadly rounded at the apex. Anterior metatarsus with six spines.

♂, 18 mm. long. The legs are darker than in the ♀, with the femora blackish over the basal half. Interocular distance on the vertex equal to the length of the first joint of the flagellum. Third to sixth joints of the latter feebly and arcuately dilated below. Seventh tergite trapezoidal, clothed with reddish golden pubescence. Eighth sternite widely truncate at the apex, the lateral apical angles narrowly rounded. Otherwise like the ♀.

Meru lowlands and Nyasaland. December to February.

T. Turneri, n.sp.

♀, 12 mm. long. Head, thorax, coxae and trochanters black. Scapes below, legs and tegulae ochreous, the third to sixth and apex of the second joint of the flagellum ferruginous beneath. Mandibles pale yellow at the base, castaneous at the apex. Apical halves of the first to fifth abdominal segments flavo-testaceous, their basal halves blackish or dark brown, the first and second tergites with a flavo-ferruginous transverse band in the middle, the second sternite with a round ferruginous spot on each side, the pygidium black. Wings hyaline, with ochreous veins. Pubescence pale brassy golden except on the clypeus and lower half of the face, where it is almost silvery, and on the tibiae where it is golden only. The pubescence on the thorax is fairly dense and decumbent, hiding the sculpture, and on the abdomen sparse except on the apical margins where it forms narrow transverse bands. Pilosity pale yellow, long but not abundant, except on the sides of the thorax and on the epinotum. Pygidial area clothed with reddish golden setae.

First and second sternites dull, finely and closely punctured and pubescent, the remaining sternites dull, finely punctured and pubescent on the sides, glabrous, shining and sparsely punctured in the middle. Galea shorter than the scape; labial and maxillary palpi yellow, with the apical joints fuscous. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. Pygidial area longer than wide at the base, the apex subacute. Anterior metatarsus with five spines on the outer margin. Inner calcar of hind tibia longer than the basal joint of the hind tarsus.

♂, 12 mm. long. Pubescence on the abdomen paler than in the ♀, almost greyish silvery. The second to seventh joints of the flagellum pale ferruginous beneath. First and second tergites without the transverse band of ferruginous colour in the middle. Pygidium triangular, as long as wide at the base, the apex moderately rounded, covered with pale silvery golden pubescence; eighth sternite rounded at the apex, not emarginate. Anterior metatarsus with four spines. Otherwise like the ♀.

Sawmills, S.R. December. 1 ♀, 2 ♂. Types in R.M. coll.

A very distinct species, characterised by the pale colour, especially of the legs, scapes and underside of the flagellum, and by the elongate pygidium and entire eighth sternite in the ♂.

T. ugandensis Turner (Fig. 41 g). *Ann. Mag. N.H.* xx (8), No. 115, p. 31, ♀, ♂. 1917.

♀, 13 mm. long. Black; mandibles castaneous, apices of the femora, the tibiae and tarsi, and the tegulae ferruginous. Wings hyaline, the veins testaceous. Face and clypeus clothed with pale golden pubescence. Pubescence of the thorax pale golden and scanty, the pilosity pale ochreous. The first four tergites with apical bands of greyish silvery pubescence. Pygidial area clothed with dark reddish setae. Vertex distinctly and sparsely punctured. Second

sternite minutely and closely punctured. Interocular distance on the vertex equal to a very little more than the combined length of the second and third joints of the flagellum (in another specimen in the B.M. coll. it is a little less than the second and third). Pygidial area triangular, the apex narrowly rounded. Anterior metatarsus with seven spines on the outer margin. Galea broadly rounded at the apex, hardly longer than the scape.

♂, 13 mm. long. Pubescence on the face and clypeus of a deeper golden colour than in the ♀. The pubescence on the abdomen with a tinge of yellow. Seventh tergite rounded at the apex; eighth sternite deeply and narrowly emarginate, the apical angles blunt. Otherwise like the ♀.

Hab. Uganda. Type in the B.M. coll.

T. Kristenseni Turner. *Loc. cit.* p. 30, ♀.

♀, 9 mm. long. Black; tibiae, tarsi and posterior femora ferruginous, tegulae testaceous, apical margins of the abdominal segments narrowly brown. Face and clypeus with dull silvery pubescence. Thorax and first four tergites with pale yellowish silvery pubescence. Pygidial area clothed with pale golden pubescence. Wings hyaline, the veins fusco-ferruginous. The apical fasciae on the first four tergites distinctly wide.

Second sternite dull, very finely and closely punctured. Interocular distance on the vertex equal to the length of the first two joints of the flagellum, the first joint of the latter quite half as long as the second. Pygidial area narrow, one and a half times longer than wide at the base, narrowly rounded at the apex. Anterior metatarsus with five spines.

A slender species with rather short antennae.

Hab. Harar, Abyssinia.

Turner in his description of this species says that there are only three spines visible on the basal joint of the fore tarsus; this is incorrect, as there are distinctly five to be seen on the left fore tarsus of the type in the B.M. coll.

T. associata Turner (Fig. 41 f). *Loc. cit.* p. 29, ♂.

♂, 15 mm. long. Black; apices of the femora, tibiae, tarsi and tegulae, ferruginous. Face and clypeus clothed with golden pubescence. Thorax with a deep golden pubescence which is dense and adpressed, hiding the sculpture. The pilosity pale golden or yellow. First five tergites with apical fasciae of silvery pubescence; all the sternites with a fairly abundant, exserted and yellowish pilosity. Pygidial area covered with pale golden pubescence. Wings hyaline, faintly tinged with yellow, the veins brownish yellow. First and second sternites finely and closely punctured, and dull all over. The remaining sternites shining, shallowly and sparsely punctured. Anterior margin of clypeus narrowly depressed, arcuate. Interocular distance on the vertex equal to the length of the second joint of the flagellum. Seventh tergite widely rounded at the apex, wider at the base than long; eighth sternite broad, the apex bisinuate. Anterior metatarsus with five spines.

♀ (hitherto undescribed), 15 mm. long. Apical third of the front and middle femora, and apical two-thirds of the hind femora on the inner face above, ferruginous. Interocular distance on the vertex slightly greater than the length of the second joint of the flagellum. The latter fairly long and slender, the second joint three and a quarter times longer than the first and a little longer than the third. Galea as long as the scape. The anterior margin of the median area of the clypeus with three small teeth on each side. Pygidial area covered with fulvous setae, the apex truncate and rounded at the apical angles. Anterior metatarsus with five spines; all the spines on the legs ferruginous. Inner calcar

of the hind tibia a little longer than the basal joint of the hind tarsus. Otherwise like the ♂.

Beira, ♂ (Sheppard); ♀ (Arnold). Type in the B.M. coll.

T. tomentosa Kohl. *Ann. Soc. Ent. Belg.* xxxv, p. 16, ♀. 1891. Turner, *loc. cit.* p. 33, ♀, ♂.

♀, 13–14 mm. long. Black; mandibles castaneous, their apices black. Apices of the femora, tibiae and tarsi reddish ochreous, tegulae testaceous. Wings faintly flavo-hyaline, the veins ferruginous. Face, clypeus, temples, pronotum, sides of the thorax and lateral margins of the mesonotum covered with golden pubescence; pilosity on the thorax yellow, scanty above, longest and most abundant on the epinotum, which has very little underlying pubescence. First four tergites with transverse bands of scanty golden pubescence on the apical margins; the pygidial area clothed with fulvous golden setae. Thorax very finely and closely punctured, the dorsum and declivity of the epinotum closely punctate-rugulose. First and second sternites dull, finely and closely punctured, the remaining sternites dull and closely punctured on their apical margins, shining, very sparsely and coarsely punctured basally. Anterior margin of clypeus convex, with three small teeth on each side of the median area. Galea not longer than the scape. Interocular distance on the vertex equal to the length of the second joint of the flagellum. Pygidial area triangular, narrowly rounded at the apex. Basal joint of the fore tarsus with five spines.

“♂. Seventh tergite rather narrowly truncate at the apex; eighth ventral segment truncate at the apex, the angles not produced. The pubescence on the abdomen is paler than in the ♀; and the eyes are closer together on the vertex, separated by about the length of the first joint of the flagellum.”

Hab. Cape (Kohl); Gold Coast, Nyasaland and Uganda.

Two females from Durban (C. N. Barker), which I identify with this species, have the pygidial area subacute at the apex, but otherwise conform to the description of the species as given by Turner.

T. neglecta Turner. *Loc. cit.* p. 32, ♀, ♂.

♀, 12–14 mm. long. Black; tibiae and tarsi ferruginous, apical margins of the abdominal segments narrowly brown. Wings hyaline, faintly tinged with yellow, the veins brown. Face and clypeus with a brassy silvery pubescence; thorax with a deep golden pubescence, and pilosity somewhat paler. Abdomen with greyish brown pubescence, the first four tergites with apical fasciae of a dull and pale golden pubescence; pygidial area with reddish golden pubescence.

Vertex sparsely and shallowly punctured. Second sternite dull, very finely and closely punctured. Galea one-fourth longer than the scape. Interocular distance on the vertex equal to the combined length of the second plus half the first joints of the flagellum. Pygidial area triangular, longer than wide at the base, the apex subacute. Anterior metatarsus with six spines.

♂, 13 mm. long. Interocular distance on the vertex slightly exceeding the length of the second joint of the flagellum; seventh tergite broadly rounded at the apex and clothed with golden pubescence; eighth sternite deeply and narrowly emarginate, the angles produced. Otherwise like the ♀.

Turner in his description of this species says that the galea is no longer than the scape. An examination of the type, however, shows by actual measurement that it is one-fourth longer, and also that the interocular distance is less than the length of the first and second joints of the flagellum. Moreover, of the six ♀♀ placed under this species in the British Museum's collection, there

are two in which the galea is twice as long as the scape, and in another specimen from Nyasaland (B.M. No. 353, Neave 1910) there are only five spines on the metatarsus. There is little doubt, therefore, that that series comprises at least two different species. The connection between this species and *tomentosa* is also very close.

T. irritabilis Turner. *Loc. cit.* p. 28, ♂.

♂, 11-13 mm. long. Black; tarsi, extreme apices of the femora, all the tibiae outwardly, tegulae and veins of the wings, pale reddish ochreous. Apical margins of the abdominal segments narrowly brown. Wings faintly flavo-hyaline. Face and clypeus with a dense and dull brassy golden pubescence. Thorax with a pale golden adjacent pubescence and pale yellow pilosity. The pubescence and pilosity more abundant on the epinotum than elsewhere. First four tergites with apical fasciae of very pale brassy pubescence, the sternites with a thin, exserted and yellowish pilosity, the pygidium with pale golden pubescence. Vertex fairly closely and distinctly punctured. Thorax very finely coriaceous-punctate. Sternites nitidulous, punctured, the punctures becoming deeper and closer progressively towards the apex of the abdomen. Galea about half as long again as the scape. Interocular distance on the vertex slightly less than the length of the second joint of the flagellum. Seventh tergite not very wide, the apex broadly rounded; eighth sternite narrowly and angularly emarginate, the apical angles blunt. Anterior metatarsus with four spines. Inner calcar of hind tibia as long as the basal joint of the hind tarsus.

Mlanje, Nyasaland; Bulawayo. April. Type in the B.M. coll (R.M.).

T. opposita Turner. *Loc. cit.* p. 31, ♂.

♂, 13 mm. long. Black; tibiae, tarsi and apices of the anterior and middle femora, reddish ochreous. Wings faintly flavo-hyaline, the veins and tegulae ochreous. Face, clypeus and thorax clothed with brassy golden pubescence, which on the thorax is decumbent and fairly dense, hiding the sculpture. Pilosity yellowish, longest on the face, sides of thorax and on the epinotum. Abdomen covered with a dull golden pubescence on the first four tergites, not dense except on their apical margins, where it forms transverse fasciae; fifth and sixth tergites with brownish pubescence, the seventh with pale silvery golden pubescence.

Vertex sparsely punctured. Galea much longer than the scape. Interocular distance on the vertex very nearly equal to the length of the second joint of the flagellum. Dorsum of the epinotum longer than the scutellum. Sternites sparsely and shallowly punctured, the second to fourth shining, the rest dull. Seventh tergite triangular, the apex widely rounded; eighth sternite arcuately emarginate, the apical angles dentiform. Anterior metatarsus with four or five spines. Inner calcar of hind tibia a little shorter than the basal joint of the hind tarsus.

Turner gives the interocular distance as being only slightly greater than half the length of the second joint of the flagellum, but from a measurement of the type that statement is proved to be incorrect.

Pakasa, N.R. (Silverlock); Sawmills, S.R. (Arnold). January.

T. cataractae n.sp.

♂, 15 mm. long. Black; mandibles flavo-ferruginous with black apices. Legs flavo-ferruginous, the basal third or more of the femora black, behind and below. Scapes yellowish red in front, black behind. Tegulae flavo-testaceous. Wings flavo-hyaline, the veins yellowish red. Clypeus, face and

thorax clothed with pale golden pubescence, fairly scanty on the disc of the mesonotum, the scutellum and dorsum of the epinotum. Pilosity long and yellow. First five tergites covered with pale greyish pubescence, distinctly scanty except on the apical margins, where it forms narrow transverse fasciae. Pubescence of the sixth tergite brown, of the seventh silvery, tinged with golden. Second sternite nitidulous, closely and shallowly punctured, the third to seventh sternites fairly shining, sparsely and more coarsely punctured over their apical halves; sixth and seventh sternites with brown pubescence. Eighth sternite arcuately emarginate, the apical angles acute but not produced. Galea half as long again as the scape. Anterior margin of the clypeus convex, the median area with a fairly deep median excision and three small teeth on each side. Interocular distance on the vertex not more than two-thirds the length of the second joint of the flagellum. The latter is two and a half times longer than the first, and barely longer than the third joint. Dorsum of epinotum fully as long as the scutellum and metanotum taken together. Seventh tergite widely rounded at the apex. Anterior metatarsus with five spines; the inner calcar of the hind tibia a little shorter than the basal joint of the hind tarsus.

Victoria Falls. 2 ♂♂. January. Type in R.M. coll.

Allied to *Hamiltoni* Turner but with a shorter galea and shorter interocular distance on the vertex.

T. glabriuscula n.sp.

♂, 7-8 mm. long. Black; tarsi and calcaria pale ochreous, the spines on the legs whitish; tegulae flavo-testaceous. Face, clypeus and lateral margins of the mesonotum with pale golden pubescence. The pubescence on the thorax is silvery, dense only on the mesopleurae, scanty or absent elsewhere. Pilosity on the thorax scanty and greyish white. First four tergites with greyish silvery and fairly long pubescence, scanty except on the apical margins where it forms transverse fasciae; fifth and sixth tergites with brownish, the seventh with silvery pubescence. Vertex, mesonotum and scutellum finely and distinctly punctured, fairly closely so on the vertex, more sparsely on the thorax, the punctures being smaller than the spaces between them. Dorsum of epinotum fairly shining, transversely aciculate, the sides almost smooth, the declivity transversely striolate. Second to seventh sternites fairly shining, the second shallowly and not very closely punctured all over, the rest more strongly punctured only on the apical margins.

Galea broadly rounded at the apex, distinctly shorter than the scape. Anterior margin of the clypeus convex, the depressed margin of the median area shining. Interocular distance on the vertex distinctly great, being equal to the combined length of the second and third joints of the flagellum. Second joint of the flagellum about two-thirds longer than the first, not longer than the third. Dorsum of epinotum as long as the scutellum and metanotum together. Pygidial area trapezoidal, the apex rounded; eighth sternite arcuately emarginate, the lateral angles acute but not produced. Anterior metatarsi with three spines on the outer margin. Inner calcar of hind tibia as long as the basal joint of the hind tarsus. Wings hyaline, nervures testaceous.

Victoria Falls. January (type); Sawmills, S.R. December.

In one of the specimens from Sawmills, the tibiae also are ochreous, but otherwise like the type. In the great width of the vertex this species resembles *ugandensis*, but it is otherwise very distinct (R.M., T.M. colls.).

T. punctuosa n.sp. •

♂, 12.5 mm. long. Black; tarsi ferruginous, the basal joint more or less fusco-ferruginous. Tegulae testaceous. Wings hyaline, the veins ochreous

proximally, turning to brown towards the apex. Face and clypeus with silvery pubescence and pilosity. Thorax without any adpressed pubescence, clothed only with a long, sparse and yellowish pilosity, not obscuring the sculpture. First tergite covered with a sparse greyish silvery pubescence and pilosity, the pubescence denser on its apical margin where it forms a transverse band, the following three tergites with similar pubescence only on their apical margins; the fifth and sixth tergites with blackish, the seventh with yellowish silvery pubescence. Vertex, mesonotum and scutellum sharply punctured, closely and finely so on the vertex, more strongly and less closely on the mesonotum and scutellum. Dorsum and declivity of epinotum fairly closely reticulate-rugulose, the mesopleurae and sides of the epinotum finely and closely punctured. Second sternite nitidulous, shallowly but fairly closely punctured, except in the middle of the apical margin. The following sternites shining, finely and closely punctured only at the sides, very scantily and coarsely punctured elsewhere.

Median area of clypeus with a blunt tooth on each side. Galea rounded at the apex, not longer than the scape. Second to sixth joints of the flagellum arcuate below, the second a little longer than the third. Vertex broad, the interocular distance there being equal to the length of the second and third joints of the flagellum. Thorax and abdomen slender. The dorsum of the epinotum is a little longer than the scutellum and metanotum combined. Seventh tergite rounded at the apex; eighth sternite fairly broad, shallowly and arcuately emarginate at the apex, the apical angles rounded. Anterior metatarsi with four spines on the outer margin. Inner calcar of hind tibia considerably shorter than the basal joint of the hind tarsus.

De la Rey, Transvaal. January (Dr H. Brauns). Type in R.M. coll.

The distinct puncturation and almost total absence of decumbent pubescence on the thorax sufficiently characterise this species.

T. notabilis Turner. *Loc. cit.* p. 41, ♀, ♂.

♀, 11-13 mm. long. Black; tarsi fusco-ferruginous, tegulae testaceous. Clypeus and face with golden pubescence. Thorax with a very sparse and dull golden pubescence, not hiding the sculpture; the pilosity yellowish grey, short and sparse. First four tergites with apical bands of yellowish grey pubescence. Pygidial area with reddish golden pubescence.

Vertex dull, with a few large punctures. Mesonotum closely punctate-rugulose; the dorsum of the epinotum more strongly so. Second sternite dull, very finely and closely punctured, the following sternites shining, sparsely and coarsely punctured on the apical margins. Clypeus closely and shallowly punctured, the anterior margin transverse. Galea shorter than the scape. Interocular distance on the vertex equal to the length of the first two joints of the flagellum; the second joint of the latter is a little longer than the third and nearly three times longer than the first. Dorsum of epinotum as long as the scutellum and metanotum combined. Pygidial area triangular, longer than wide at the base, narrowly rounded at the apex. Anterior metatarsus with five spines. Inner calcar of hind tibia as long as the basal joint of the hind tarsus. Wings hyaline, tinged with fuscous, the veins testaceous.

♂, 11 mm. long. Anterior metatarsus with four spines on the outer margin. Second sternite as in the ♀, the following sternites closely and fairly strongly punctured over the apical halves. Seventh tergite broadly rounded at the apex, clothed with pale golden pubescence. Eighth sternite narrow, arcuately emarginate at the apex, the apical angles not dentiform. Otherwise like the ♀.

Nyasaland, Uganda, British East Africa; Bulawayo, March; Barberton, December (Janse).

A rather slender species, especially in the ♂, and easily recognised by the distinct and rugulose sculpture of the thorax.

T. Braunsi Turner. *Ann. Mag. N.H.* xx (8), No. 118, p. 292, ♀, ♂. 1917.

♀, 15.5-17 mm. long. Black; tarsi ferruginous, fuscous towards the base, tegulae pale dirty ochreous. Wings flavo-hyaline, the veins ferruginous. Clypeus and face clothed with greyish silvery pubescence. Thorax clothed with an erect, whitish and rather sparse pilosity, a decumbent pubescence absent except on the mesopleurae in front. First four tergites with apical transverse bands of greyish silvery pubescence; the pygidial area with pale golden pubescence. Vertex, mesonotum and scutellum dull, closely and finely punctured, the dorsum of the epinotum finely reticulate-rugulose. Second sternite dull and finely punctured, the following sternites shining, with a pre-apical row of irregular and coarse punctures. Anterior margin of the clypeus with three teeth on each side of the median area. Galea a little shorter than the scape, wider than long. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. Pygidial area elongate-triangular, narrowly rounded at the apex. Anterior metatarsus with five spines on the outer margin (Turner says four, but an examination of his ♀ cotype shows five on the left, and four on the right metatarsus).

♂, 14 mm. long. Apical margins of the abdominal segments faintly fusc-ferruginous. Vertex distinctly punctured. Interocular distance on the vertex equal to the length of the second joint of the flagellum. Anterior metatarsus with four spines. Seventh tergite broadly rounded at the apex, clothed with pale silvery golden pubescence; eighth sternite shallowly emarginate at the apex, the angles not produced. Otherwise like the ♀.

Willowmore, C.P. November to December (Dr H. Brauns).

The two ♀♀ in my possession are somewhat larger than the type in the B.M. coll., but otherwise similar.

T. bulawayoensis Bischoff. *Arch. f. Naturges.* A 3, p. 68, ♀, ♂. 1913.

♀, 15 mm. long. Black; tarsi dark ferruginous, the basal joint fuscous. Tegulae testaceous. Wings hyaline, faintly tinged with ochreous, the veins ochreous. Face and clypeus clothed with short silvery pubescence. Pilosity of face and thorax whitish, erect and not very abundant. In addition, the thorax has a decumbent pubescence of a dull pale yellow colour, fairly dense. Abdomen with greyish silvery pubescence, denser on the apical margins, where it forms transverse fasciae. Pygidial area clothed with dark reddish golden setae (not reddish brown as stated in Bischoff's description). Posterior tibiae with pale golden pubescence. Clypeus, face, mesonotum and scutellum very closely and finely punctured, the punctures contiguous. Vertex dull, shallowly and sparsely punctured. Anterior margin of the median area of the clypeus convex, depressed and narrowly excised in the middle. Galea about as long as the scape, rounded apically. First joint of the labial palpi slender, as long as the third and fourth combined. Interocular distance on the vertex nearly equal to the length of the first two joints of the flagellum. Second and third sternites dull, closely and finely punctured; the fourth, fifth and sixth shining, coarsely punctured on their apical halves. Pygidial area elongate-triangular, the apex narrowly rounded. Anterior metatarsus with six spines. Inner calcar of hind tibia a trifle longer than the basal joint of the hind tarsus.

Bulawayo and Matopos, S.R. December to March. (R.M. and T.M. colls.)

T. confusa n.sp.

♀, 14 mm. long. This species is very similar to *bulawayoensis*, from which it differs as follows.

Adjacent pubescence on the thorax scantier, almost absent on the dorsum of the epinotum. The pygidial area clothed with fine orange golden pubescence. Sculpture of the thorax more distinct; the mesonotum and scutellum are sharply punctured, the punctures discrete and smaller than the spaces between them; the scutellum more strongly punctured than the mesonotum. The dorsum of the epinotum is very distinctly and transversely reticulate-rugulose (microscopically reticulate only in *bulawayoensis*). The vertex is closely and finely punctured. Second sternite dull all over, closely and finely punctured; third and following sternites shining, coarsely and sparsely punctured over their apical halves.

The interocular distance on the vertex is equal to the length of the second joint of the flagellum. The galea is shorter than the scape, and much more rounded at the apex than in *bulawayoensis*. The pygidial area is narrowly truncate at the apex, not rounded as in the other species. The anterior metatarsus has five spines on the outer margin, and the spur of the hind tibia is not longer than the basal joint of the tarsus.

Bulawayo. December. 1 ♀. (Type in R.M. coll.)

This species may be distinguished from the other allied forms as follows: *argenteovestita* and *transvaalensis* have the interocular space wider; *Distanti* has the pubescence of the tergites and pygidial area of a different colour, and also has a wider interocular space.

T. argenteovestita Cameron. *Ann. Transvaal Mus.* 11, p. 130, ♀. 1910.

♀, 13 mm. long. This is very much like *bulawayoensis* but smaller. Thorax without decumbent pubescence. The pubescence on the abdomen brighter, more distinctly silvery. The pygidial area clothed with fine and pale golden pubescence, not with reddish golden setae as in *bulawayoensis*. The vertex, like the mesonotum and scutellum, is distinctly and closely punctured, the punctures on the thorax larger and further apart than in the other species. The dorsum of the epinotum is distinctly, although finely, reticulate-rugulose. The interocular distance on the vertex is greater, being fully equal to the combined length of the second and third joints of the flagellum. Galea shorter than the scape, widely rounded at the apex. Third sternite shining. Inner calcar of hind tibia shorter than the basal joint of the hind tarsus. Wings clear hyaline, the veins ochreous. Otherwise like the ♀ of *bulawayoensis*.

♂, 13.5 mm. long. Punctuation of the vertex, mesonotum and scutellum stronger than in the ♀. Third to sixth joints of the flagellum arcuate beneath. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum, plus half the first. Pygidial area triangular, the apex widely rounded. The second sternite finely punctured at the sides, coarsely so and pilose in the middle. Eighth sternite almost transversely truncate, at the most only feebly emarginate. Anterior metatarsus with four spines. Otherwise like the ♀.

Pietersburg, Transvaal (A. J. T. Janse); Bothaville, O.F.S. (Dr H. Brauns). (R.M. and T.M. colls.)

T. transvaalensis Cameron. *Entomologist*, p. 153, ♀. 1905.

♀, 14 mm. long. Of this species I have one example (Bloemfontein) which by comparison appears to be identical with the specimens under this name in the British Museum collection. The only appreciable differences which I can find between it and *argenteovestita*, apart from size, are the less acute pygidial

area and the colour of the pubescence of that part, which is a shade darker than in *argenteovestita*. The calcar of the hind tibia is also longer, being fully as long as the basal joint of the hind tarsus. The examination of more extensive material might result in having to reduce *argenteovestita* to subspecific rank.

T. inexorabilis Turner. *Ann. Mag. N.H.* xx (8), No. 115, p. 36, ♀, ♂. 1917.

♀, 14 mm. long. Black; tarsi fusco-ferruginous, tegulae testaceous, wings hyaline, faintly tinged with yellow at the base, the veins reddish ochreous, the costa and subcosta dark brown. Clypeus, face and temples clothed with silvery pubescence, tinged with yellow; thorax covered with a decumbent pubescence, dull golden above, paler at the sides, nowhere abundant and not hiding the sculpture. Pilosity on the thorax long and yellowish, most dense on the epinotum. First tergite with a thin yellowish decumbent pubescence and outstanding pilosity. First four tergites with apical fasciae of greyish silvery pubescence. Pygidial area clothed with dark reddish setae. Pubescence on the legs silvery golden.

Vertex dull, with a few large punctures. Mesonotum closely and very finely, the scutellum less finely, punctured; dorsum of epinotum punctate-rugulose. Second and third sternites dull, finely and closely punctured, the following sternites shining and coarsely punctured at the base, finely so and dull on the apical margins. Anterior margin of the clypeus convex, the median area with three minute blunt teeth on each side in front. Galea shorter than the scape, broadly rounded at the apex. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. Dorsum of epinotum as long as the scutellum. Pygidial area triangular, the apex narrowly rounded. Anterior metatarsus with six spines. Inner calcar of hind tibia as long as the basal joint of the hind tarsus.

♂, 12-14 mm. long. Pubescence of face and clypeus golden. Pygidial area clothed with silvery golden pubescence. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. Second and following sternites moderately shining, shallowly and not very closely punctured. Seventh tergite broadly rounded at the apex; eighth sternite shallowly emarginate, the apical angles blunt. Otherwise like the ♀.

Transvaal, Natal, East Africa and Uganda; East London (Dr H. Brauns). (R.M. and T.M. colls.)

T. hirsuta Smith. *Cat. Hymen. B.M.* IV, p. 300, ♂. 1856.

♂, 14-15 mm. long. Apart from size and colour of the pilosity and pubescence, this species does not appear to me to differ greatly from *inexorabilis*. The pilosity is more abundant, especially on the epinotum, and is of a yellower colour. The yellow and adjacent pubescence is more noticeable and fairly dense on the first tergite. The sternites have a fairly long, outstanding and abundant pilosity, pale yellowish on the first four sternites, darker on the rest. The type in the Brit. Mus. coll. is defective, the third and following abdominal segments having been lost, but measurement of the interocular distance in that specimen shows that it is equal to the combined length of the first two joints of the flagellum, and not "scarcely exceeding the length of the second" as stated by Turner. Moreover, in the type the normal number of spines on the front metatarsus is probably six, since on one leg it is five and on the other six. The galea is like that of *inexorabilis*. Second and third sternites closely, shallowly and finely punctured, almost dull, the puncturation closer than in *inexorabilis*. The eighth sternite is a little more deeply and more angularly emarginate, but it is not particularly narrow. Turner describes this segment as narrow, but obviously this observation must be based on the other

specimens which he ascribes to Smith's species, since the type has lost the end of the abdomen.

I ascribe to this species two specimens, ♀ and ♂, taken at De la Rey, Transvaal (Dr H. Brauns). The ♀ is exceedingly like that of *inexorabilis*, and differs from it only in the following features: size somewhat larger, 16.5 mm. long. Costa and subcosta and all the other veins of the wing ochreous. Galea slightly longer and less rounded at the apex. First four sternites finely, closely and evenly punctured, dull. Pygidial area narrower, more acute at the apex and clothed with pale golden hairs.

T. erynnis Turner. *Ann. Mag. N.H.* xx (8), No. 115, p. 37, ♀, ♂. 1917.

♀, 15 mm. long. This species differs from *inexorabilis* ♀ by very little. The wings are more strongly tinged with flavous, especially at the base, and the costa and subcosta are ferruginous, the other veins flavo-ferruginous. The pygidial area is covered with dull reddish golden hairs, and is more elongate and more acute at the apex. The wings are shorter than in *inexorabilis*, not reaching the apex of the abdomen. Otherwise like that species.

“♂, 14 mm. long. Eyes separated on the vertex by a distance scarcely exceeding half the length of the second joint of the flagellum; sternites closely and evenly, but not very minutely punctured; seventh tergite rather narrowly rounded at the apex; eighth sternite narrow, deeply emarginate.”

Transvaal, Natal, Zululand; Salisbury, S.R.

T. instabilis Turner. *Loc. cit.* p. 39, ♀, ♂.

“Very similar to *T. inexorabilis* in both sexes, but the pubescence on the thorax and median segment is golden grey, very short and close lying under sparse, long, erect hairs; the ♂ has the seventh tergite broadly subtruncate at the apex, not rounded, and the eighth sternite much broader, though also emarginate; the punctures of the sternites are distinctly larger. The female differs in the sparse and large punctures of the third, fourth and fifth sternites, which are shining, whereas in *inexorabilis*, except at the extreme base, they are opaque and very minutely and closely punctured; the eyes are a little nearer together on the vertex, being separated by a distance equal to the length of the two basal joints of the flagellum; the wings in both sexes are slightly more yellowish at the base, and the galea is distinctly shorter and broader, being scarcely more than half as long as the scape, whereas in *inexorabilis* it is nearly as long as the scape.

Length ♂ 11 mm., ♀ 12-14 mm.

Hab. Nyasaland, Mlanje (S. A. Neave). January and February.”

The pubescence on the pygidial area in the ♀ is fulvous golden. The interocular distance is the same in both sexes. The male has four spines on the anterior metatarsus, and the female has five. I ascribe to this species two females and a male from Willowmore (Dr H. Brauns), which agree with the description in all particulars except that in the female the pubescence on the thorax is very scanty and grey in colour, without any tinge of golden, and the wings are hyaline throughout.

T. melancholica n.sp.

♂, 13-15 mm. long. Black; tarsi fusco-ferruginous, becoming paler towards the apex. Mandibles castaneous. Apical margins of the abdominal segments fusco-ferruginous. Wings hyaline, pale flavo-hyaline at the base, the veins pale ferruginous. Clypeus and face clothed with silvery pubescence and pilosity. The adjacent pubescence on the thorax yellowish and scanty, absent from the epinotum. The pilosity yellowish silvery. Abdomen with a

thin greyish white pubescence, forming transverse fasciae on the apical margins. The ventral segments with an outstanding and yellowish white pilosity, longest and most abundant on the second sternite. Clypeus and vertex finely punctured, the former closely, the vertex sparsely so. Mesonotum and scutellum closely and finely punctured, the punctures discrete, shallow on the mesonotum, larger and deeper on the scutellum. Dorsum of epinotum closely reticulate-rugulose. Second and following sternites moderately shining, the second to fifth shallowly, irregularly and not closely punctured on the apical halves. Sixth and seventh sternites dull, closely punctured, the seventh with smaller punctures than the sixth. Galea not longer than the scape, its distal lobe only half as long as the scape, broadly rounded at the apex. The median area of the clypeus with three indistinct teeth on each side of the anterior margin. Interocular distance on the vertex small, being barely equal to the length of the second joint of the flagellum. Dorsum of epinotum fully as long as the scutellum and metanotum taken together. Seventh tergite widely rounded at the apex, eighth sternite deeply and almost angularly emarginate, the apical angles acute and dentiform. Anterior metatarsus with four spines.

Victoria Falls. November. 6 ♂♂. Type in R.M. coll. (T.M. coll.).

T. lachesis Turner. *Loc. cit.* p. 40, ♀.

"♀. Nigra; tibiis anticis basi extremo, calcaribus, tarsisque articulis apicalibus fusco-ferrugineis; alis hyalinis, pallidissime flavidulis, venis ferrugineis; fronte clypeoque aureo-pubescentibus; thorace segmentoque mediano griseo-aureo pubescentibus; segmentis dorsalibus 4 basalibus fascia apicali subargenteo-pubescente; area pygidiali fusco-ferrugineo-pubescente. Long. 13 mm."

"♀. Clypeus very broadly rounded at the apex; galea much shorter than the scape; vertex microscopically punctured in the middle, with a few large punctures near the eyes, which are separated on the vertex by a distance equal to the combined length of the two basal joints of the flagellum. Basal joint of the fore tarsi with six spines; spur of the hind tibia longer than the basal joint of the hind tarsus. Median segment scarcely longer in the middle than the scutellum, with a shallow, but distinct longitudinal sulcus. Sternites 3-5 shining, with large sparse punctures, smooth at the base. Pygidial area broadly rounded at the apex.

Hab. Nyasaland, Mlanje (S. A. Neave). February."

It is incorrect to describe the pubescence of the thorax as greyish golden, it is actually a dull deep golden, and the pilosity is short and pale ochreous. There is also a golden tinge on the abdominal pubescence. The second sternite is very closely, finely and evenly punctured, and fairly dull. The galea is wider than long.

T. versatilis Turner. *Loc. cit.* p. 34, ♀, ♂.

♀, 16-18 mm. long. Black; tegulae testaceous, spines on the tarsi grey. Face and clypeus with greyish silvery pubescence; dorsum of thorax (including the epinotum) with a tomentose and deep fulvous golden pubescence, at the sides and below the pubescence is scantier and paler, the pronotal collar has pale silvery pubescence. First four tergites with apical bands of silvery pubescence; the pygidial area covered with reddish brown setae. Wings subhyaline, narrowly and faintly infusate at the apex, the veins ferruginous. Vertex coarsely and closely punctured. Abdomen closely and distinctly punctured, more sparsely and more coarsely at the base of the tergites than at the apex; second sternite shining, nearly as sparsely and coarsely punctured as the third and fourth.

Clypeus feebly emarginate in the middle of the anterior margin, with three blunt teeth on each side in front. Galea broadly rounded at the apex, somewhat shorter than the scape. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. Pygidial area subtriangular, the apex widely rounded. Anterior metatarsus with six spines.

♂, 14 mm. long. Interocular distance a little greater than the length of the second joint of the flagellum. Seventh tergite trapezoidal, covered with reddish golden pubescence. Eighth sternite arcuately emarginate at the apex, the apical angles subacute. Second ventral segment shining, with larger punctures than in the ♀. Anterior metatarsus with five or six spines (in the type of the ♂ one of the spines appears to me to have been broken off, so that the full number may be six).

Nyasaland and Uganda.

T. habilis Turner. *Loc. cit.* p. 35, ♂.

"♂. Niger; tarsi subtus, calcaribusque fusco-ferrugineis; tegulis testaceis; alis hyalinis, pallidissime flavidulis, venis fulvis; fronte clypeoque aureo-pubescentibus; thorace segmentoque mediano griseo-aureo-pubescentibus; segmentis dorsalibus 4 basalibus fascia apicali griseo-argenteo-pubescente. Long. 15 mm."

"♂. Clypeus broadly rounded at the apex; galea shorter than the scape; vertex minutely and closely punctured; eyes separated on the vertex by a distance about equal to the combined length of the two basal joints of the flagellum. Basal joint of fore tarsus with eight spines. Median segment at least half as long again as the scutellum, without a longitudinal sulcus on the dorsal surface. Sternites subopaque, very closely and finely punctured, with long sparse pubescence. Seventh tergite very broadly rounded at the apex, clothed with silver pubescence, slightly tinged with gold. Eighth sternite broadly rounded or subtruncate at the apex, the angles not produced.

Hab. Nyasaland, S.E. shore of Lake Nyasa, between Fort Maguire and Fort Johnstone (S. A. Neave). March."

T. disputabilis Turner. *Loc. cit.* p. 39, ♂.

♂, 11 mm. long. Black; tarsi reddish ochreous, the basal joint fuscous above. Tegulae testaceous. Wings hyaline, the veins ochreous at the base, becoming fuscous towards the apex. Clypeus and face with a pale brassy pubescence. Thorax with a pale yellowish white pilosity and a dull, pale brassy pubescence; the latter not dense and absent from the dorsum of the epinotum. First four tergites with greyish pubescence slightly tinged with golden, forming transverse apical fasciae. Seventh dorsal segment with pale yellowish silvery pubescence. Vertex and mesonotum microscopically punctured, the scutellum a little less finely, the dorsum of the epinotum microscopically reticulate. Second sternite dull, closely and very finely punctured, the third to sixth sternites shining, closely and fairly strongly punctured over their apical halves; the seventh dull, closely and finely punctured. Galea much shorter than the scape, rounded at the apex. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. Seventh tergite long, rounded at the apex; eighth sternite emarginate, the apical angles dentiform. Anterior metatarsus with four spines. Inner spur of hind tibia a little longer than the basal joint of the hind tarsus.

♀ (hitherto undescribed), 12 mm. long. The joints of the middle and hind tarsi fuscous, with ferruginous bases. Pubescence of face and clypeus silvery. Pygidial area clothed with dark reddish brown setae. Puncturation of the vertex, mesonotum and scutellum a little sharper than in the ♂. Pygidial area

elongate-triangular, the apex moderately rounded. Anterior metatarsus with five spines. Otherwise like the ♂.

Nyasaland, January; Sawmills, S.R. (Arnold), December. (R.M. coll.)

T. megaera Turner. *Loc. cit.* p. 40, ♀.

"♀. Nigra; tarsi subtus articuloque apicali supra, calcaribusque ferrugineis; tegulis testaceis; alis basi flavidulis, apice hyalinis, venis ferrugineis; fronte clypeoque argenteo-pubescentibus; thorace segmentoque mediano albido-pubescentibus; segmentis dorsalibus 4 basalibus fascia apicali griseo-argenteo-pubescente; area pygidiali fusco-ferrugineo-setosa. Long. 13 mm."

"♀. Clypeus broadly subtruncate at the apex, the apical margin deflexed; vertex very closely microscopically punctured; eyes separated on the vertex by a distance about equal to the length of the second joint of the flagellum. Galea shorter than the scape. Basal joint of the fore tarsus with five spines; spur of the hind tibia as long as the basal joint of the hind tarsus. Thorax closely and minutely punctured; second sternite and the third, fourth and fifth sternites on the apical margin closely and minutely punctured; the three latter shining at the base, with large scattered punctures. Pygidial area triangular, rather narrowly rounded at the apex.

Hab. Gold Coast."

T. Silverlocki Turner. *Loc. cit.* p. 42, ♀.

♀, 9-10 mm. long. Black; basal joint of anterior tarsi fuscous, the remaining joints ferruginous; the middle and hind tarsi with the apical two or three joints fusco-ferruginous; calcaria ferruginous, the spines on the legs whitish. Wings hyaline, the veins brown. Face and clypeus with silvery pubescence. Pubescence on the thorax and abdomen greyish silvery, fairly scanty, longer on the apical margins of the first four abdominal segments, where it forms transverse fasciae. Pilosity of the thorax greyish white, nowhere plentiful, longer and more abundant on the sides of the epinotum. Pygidial area clothed with brownish golden and coarse pubescence. Head and thorax very finely and closely punctured, the epinotum microscopically rugulose above. Second sternite dull, closely and microscopically punctured, the third and following sternites shining, their apical margins closely and finely punctured. Interocular distance on the vertex equal to the combined length of the first two joints of the flagellum. Pygidial area elongate-triangular, the apex narrowly rounded. Anterior metatarsus with five spines. Inner calcar of hind tibia distinctly longer than the basal joint of the hind tarsus.

Victoria Falls, December to January; N. Rhodesia and British E. Africa.

T. pulchricornis Turner (Fig. 41 h). *Loc. cit.* p. 39, ♂, ♀.

♂, 12 mm. long. Black; tarsi ferruginous, fourth to ninth joints of the flagellum pale ochreous below. Clypeus and face with very pale golden pubescence. Pubescence on the thorax and abdomen and seventh tergite pale brassy silvery, forming distinct apical fasciae on the first four tergites. Pilosity greyish, fairly dense on the sides of the mesonotum and epinotum. Head and thorax closely and microscopically punctured, the dorsum of the epinotum somewhat rugulose. Second and following sternites shining, the second more finely punctured than the following four. Galea short, shorter than the scape, broadly rounded at the apex. Interocular distance on the vertex equal to the length of the two basal joints of the flagellum. Seventh tergite wide, broadly truncate at the apex; eighth sternite widely and arcuately emarginate, the apical angles acute. Anterior metatarsus with four spines. Wings pale flavo-hyaline, the veins testaceous.

♀, 13 mm. long. Pilosity and pubescence on the thorax yellower than in the ♂. Third to fifth joints of all the tarsi ferruginous, the first and second joints darker. All the joints of the flagellum black. Pygidial area triangular, acute at the apex, clothed with dark fulvous pubescence. Second sternite dull, closely and microscopically punctured, the third and following sternites shining, sparsely and coarsely punctured. Interocular distance on the vertex equal to the length of the second joint of the flagellum. Anterior metatarsus with five spines. Otherwise like the ♂.

Nyasaland, Mlanje. March.

A variety has the abdominal fasciae dull golden in both sexes.

T. obliqua Smith. *Cat. Hymen. B.M.* iv, p. 281, ♂. 1856. Turner, *Ann. Mag. N.H.* xx (8), No. 118, p. 291. 1917.

This species is unknown to me. Turner's remarks are as follows.

"This is a *Tachytes* somewhat allied to *Silverlocki* Turner. The posterior ocelli are not as long as in most species of the genus. Eighth sternite rounded at the apex."

Smith's description is too indefinite to be worth quoting.

TACHYTELLA Brauns.

Verh. Zool. Bot. Ges. Wien, lvi, pp. 43-59. 1906.

CHARACTERS. ♂. Scapes flattened and triangularly dilated. Face with weak longitudinal and transverse tori as in *Notogonidea*. Ocelli as in that genus. Pronotum a little lower than the mesonotum, not linear above posteriorly, but with a distinct collar. Thorax pubescent as in *Tachysphex* spp. Dorsum of epinotum swollen and inflated on each side posteriorly. The posterior margins of the sixth, seventh and eighth ventral segments of the abdomen with fringes of long hairs. Anterior femora not excised below. Otherwise like *Tachysphex*.

T. aureo-pilosa Brauns (Fig. 43). *Loc. cit.* supra.

♂, 13 mm. long. Black; mandibles, scapes, middle of clypeus in front, tegulae, tibiae and tarsi and first two abdominal segments, red. Anterior femora, except a black spot on the upper surface near the base, and the apices of the middle and hind femora, ferruginous. Base of the mandibles, the clypeus and the lower part of the face with a dense, short and silvery pubescence. The whole thorax clothed with a very short and close pubescence, golden above, silvery on the ventral surface, similar to that of *Tachysphex Panzeri*. Margins of the first to fifth abdominal segments with transverse fasciae of very fine silvery pubescence, the fimbriae of the sixth to eighth ventral segments rufo-fuscous. Head and thorax dull, microscopically punctured. Abdomen dull above, microscopically coriaceous, the last dorsal segment distinctly punctured. The ventral surface of the abdomen shining and smooth, except near the sides of the segments which are very finely punctulate. Legs finely pubescent. Anterior margin of the clypeus feebly convex, produced in the middle into a short and acute tooth; the median area distinctly bicarinate. Scapes com-

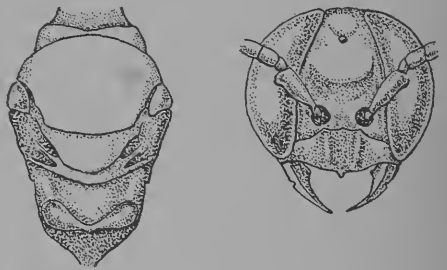


Fig. 43. Thorax and head of *Tachytella aureo-pilosa*.

pressed, triangularly dilated upwards; second, third and fourth joints of the flagellum subequal, the second not quite twice as long as the first, all the joints fairly short. The mandibles not toothed internally, the outer margin excised, but not so deeply as in *Tachysphex*. Interocular distance on the vertex a little less than the length of the second and third joints of the flagellum. The vertex is slightly depressed behind the ocellar area; the face margined at the sides with feeble longitudinal tori, but the transverse torus (present in *Notogonidea*, etc.) is almost obsolete, owing to the two planes of the face meeting at a more obtuse angle. An impressed median line extends from the anterior ocellus to near the base of the clypeus. Temples well developed, about one-third as wide as the eyes when seen from the side. The collar of the pronotum is a little shorter in the middle than at the sides, which are subangular. Dorsum of epinotum short, only half as long as the mesonotum, two and two-thirds wider at the base than long in the middle. The lateral swellings extend down the very oblique declivity, so that, seen from above, the epinotum is strongly convex on each side. The space on the dorsum of the epinotum, between the swellings, is triangular and slightly depressed. A deep median sulcus extends from the brow half-way down the declivity. Eighth sternite quadrate, the apical margin shallowly excised; seventh tergite trapezoidal, shining and strongly punctured. Legs short, feebly spinose, the tarsal joints rather short. The spur of the hind tibia shorter than the basal joint of the hind tarsus. There is no tarsal comb on the front legs. Wings hyaline, the veins brown. The venation is not unlike that of *Tachysphex*, but the third cubital cell is not produced into a tongue-like extension beyond the end of the radial cell, but is somewhat rounded at its lower and outer corner. The first and third abscissae of the radius subequal, the second a little more than half as long as the third, and not quite twice as long as the distance between the recurrent veins on the cubitus.

Willowmore, C.P. 1 ♂. January. Type in coll. Brauns.

In my opinion this is a very distinct genus, and not merely a subgenus of *Tachysphex* as suggested by Dr Brauns. It is, however, annectant between *Tachysphex* and *Notogonidea*.

LARRA Fab.

Ent. Syst. II, p. 220. 1793.

CHARACTERS. Head wider than the thorax. Eyes reaching the base of the mandibles, their inner margins convergent above. Face with a longitudinal torus or swelling on each side parallel to and near the inner orbits, and a transverse torus below the anterior ocellus. Below the transverse torus, which is generally interrupted in the middle, the face is deeply and rather narrowly excavated in the middle as far down as the level of the antennal sockets. Behind the transverse torus there is a "suprafrontal" area bounded at the sides by the upper part of the longitudinal tori, and behind by two curved, impressed and shining lines which extend from the inner orbits and meet in the middle behind the posterior ocelli. At their junction they meet a longitudinal, median and impressed line which extends back over the vertex and rarely reaches the occiput. The ocelli are not situated on a raised area; the anterior ocellus is round, small and flat, the posterior ocelli elongate and very indistinct. Mandibles excised on the lower margin, the inner margin edentate, the apex acute. Clypeus short, broad and fairly flat. Pronotum with a posterior raised portion or collar, hardly lower than the mesonotum; in some species the collar may be almost linear above. No epicnemium; episternal suture distinct. Epinotum vertical at the sides and behind, the dorsum more or less of the shape of a parallelogram, without a dorsal field. Abdomen in the ♀

usually glabrous except for the marginal bands of pubescence, thinly pubescent in the ♂. A triangular pygidial area present in the ♀, without pubescence and without terminal spines.

Front wing; radial cell appendiculate, the accessory cell usually distinct. Three cubital cells present, the first about as large as the other two combined, the second more or less hexagonal, considerably narrower on the radius than on the cubitus, receiving both recurrent veins, the third oblique and produced outwards on the cubitus towards the outer margin of the wing. The basal vein arises not far beyond the end of the submedial cell, the latter much longer than the brachial.

Hind wing; the cubitus arises well beyond the end of the submedial cell; the basal lobe very long, extending far beyond the submedial cell and ending near the anal emargination.

Legs stout and pubescent; femora distinctly swollen in the ♀; tibiae strongly spinose in the ♀, especially the middle pair, feebly spinose in the ♂. In some species the anterior tibiae are without spines excepting the usual apical ones. Posterior tibiae not longitudinally carinate. Claws unarmed. Punctuation of the body fairly strong.

Scapes often compressed apically so as to form a trenchant edge in front.

Distribution. Both hemispheres.

The prey consists of Orthoptera, chiefly grasshoppers.

The following species, being unknown to me in nature, have been omitted from the key: *rubella* Smith, *memnonia* Smith, *pallipes* Smith, *Vollenhovia* Ritsema and *diversa* Walker.

KEY TO THE SPECIES OF *LARRA* ♀♀.

- (2) 1. Small species, less than 10 mm. long; abdomen microscopically and sparsely punctured, the apical margins of the segments without pubescent fasciae at the sides. **mundula** Kohl
- (1) 2. Larger species, more than 10 mm. long; abdomen either impunctate or with distinct and fine punctures.
- (6) 3. Pronotal collar not linear above; apical half of the epinotal dorsum wider than the basal; first five tergites shining and impunctate (Fig. 44 B, b).
- (5) 4. First and second abdominal segments red, the rest black. **proditor** Kohl
- (4) 5. Abdomen black, the sixth and apical half of the fifth segments red. **erythropyga** Turner
- (3) 6. Pronotal collar very short, almost linear above; dorsum of epinotum parallel-sided, not wider at the apex than at the base; abdomen finely punctured (Fig. 44 A, a).
- (8) 7. Legs and first two joints of the flagellum reddish ochreous; interocular distance on the vertex slightly less than the length of the first two joints of the flagellum. **bulawayoensis** Bischoff
- (7) 8. Legs ferruginous, flagellum entirely black; interocular distance on the vertex equal to the length of the first two joints of the flagellum. **outeniqua** Brauns

KEY TO THE ♂♂.

- (2) 1. The supra-frontal area margined behind by a wide and deeply impressed groove; the posterior half of the ocellar area distinctly tumid. **impressifrons** Arnold
- (1) 2. The supra-frontal area margined behind only by a narrow and shallow line; the posterior half of the ocellar area not distinctly tumid.
- (4) 3. First two abdominal segments red, the rest black. **proditor** Kohl
- (3) 4. Abdomen black.

- (6) 5. Dorsum of epinotum punctato-rugose; 11.3 mm. long.
bulawayoensis Bischoff
 (5) 6. Dorsum of epinotum transversely rugoso-striate, not distinctly punctured
 between the rugae; 8.7 mm. long.
bulawayoensis, race occidentalis Arnold

L. proditor Kohl. *Ann. Soc. Ent. Belg.* xxxv, p. 15, ♂. 1891.

Kohl (*L. pseudanathema*), *Ann. K.K.N.H. Mus. Wien*, p. 296, ♀. 1894.

Bischoff (*L. semirubra*), *Arch. f. Naturges.* p. 75, ♀. 1913.

♀, 15.5–17 mm. long. Black; first two abdominal segments dark red. Wings brown, darkest near the base, with a faint violaceous tint. Head, thorax and legs with a fine, whitish and somewhat outstanding pubescence, sparse and not hiding the sculpture. First to fifth abdominal segments with streaks of longer pubescence on their lateral apical margins. First ventral segment subopaque, with a thin, whitish pubescence, the apical margin of the second narrowly pubescent, the apical margins of the remaining segments with a few long hairs, otherwise the abdomen is smooth, glabrous and very shining. Sides of face and clypeus closely and finely, the median area of the clypeus sparsely and more coarsely punctured, the rest of the vertical portion of the face smooth and very shining, with only a few large punctures near the inner margins of the longitudinal tori. Vertex, pro-mesonotum and scutellum closely and strongly punctured, the punctures on the vertex and mesopleurae larger and more widely spaced. Metanotum widely and closely punctured. Dorsum and declivity of the epinotum closely and fairly strongly punctured (the punctures sometimes less close towards the apex), and also with fine and interrupted striae between the punctures, the sides of the epinotum similarly sculptured, but a little finer and with oblique striae. Anterior margin of the clypeus moderately convex. Vertex wide, the eyes only moderately convergent above, the distance between them on the vertex equal to the length of the first two joints plus half of the third joint of the flagellum. Scapes compressed from side to side, finely punctured at the base, smooth and shining at the apex; first joint of flagellum twice as long as wide and more than half as long as the second; the latter is one-third longer than the third joint and nearly three times longer than wide at the apex. Pronotum well exposed, its collar about three and a half times wider than long, rounded in front, the sides vertical. Thorax somewhat narrow, the mesonotum wider than long, and with the scutellum, about as long as the dorsum of the epinotum. The latter has a median longitudinal carina not quite reaching the apex; it is widest in its apical half, as wide there as long in the middle, its posterior angles rounded; the sides and declivity vertical, the latter two-thirds as long as the dorsum. Abdomen oblongo-ovate. Pygidial area smooth, shining, marginate laterally, narrowly truncate at the apex, about one-third longer than wide at the base. Tibiae and tarsi strongly spinose. Radial cell roundly truncate, the accessory cell poorly defined. First and second abscissae of the radius of equal length, each about one-third shorter than the third, and a little longer than the space on the cubitus between the recurrent veins.

♂, 12–15 mm. Pubescence longer and more abundant than in the ♀, especially on the clypeus, face, epinotum and abdomen. The latter is dull, finely punctured and pubescent all over, the pubescence longer at the sides and on the apical margins, forming distinct transverse and whitish fasciae. The dorsum of the epinotum more closely punctured and more strongly striate transversely than in the ♀. Collar of pronotum linear above, sloping downwards and forwards immediately from the pro-mesonotal suture. Antennal joints shorter than in the ♀; the interocular distance on the vertex is equal to a little

more than the length of the first three joints of the flagellum. Legs feebly spinose. Wings paler than in the ♀, pale brown, and paler over the basal than the apical half. Abscissae of the radius variable; in two of the specimens before me the second is shorter than the first. Seventh tergite rounded at the apex.

Bulawayo, December to March; Natal; West Africa.

A decidedly scarce insect. I have examined the type of the ♂ and the cotype of the ♀ (*pseudanathema* Kohl) in the collection of Dr Brauns. (R.M. coll.)

L. mundula Kohl. *Ann. K.K.N.H. Mus. Wien*, ix, p. 296, ♀. 1894.

♀, 9.5 mm. long. Black; the mandibles, clypeus in front, the scape, pedicellus and first joint of the flagellum ferruginous, tarsi dark brownish red. Almost glabrous, but there is a little greyish pubescence on the mesopleurae. Face smooth and shining, vertex of head and upper surface of thorax dull, the sides of the epinotum and the whole abdomen shining. Abdomen smooth, sparsely and microscopically punctured. Vertex, mesonotum and mesopleurae strongly punctured, the pronotum finely and more closely so. Dorsum of the epinotum transversely striate, reticulate-punctate between the striae, the sides finely punctate. Pygidial area with a few fine punctures, narrow and twice as long as wide at the base. Clypeus feebly punctured, its anterior margin arcuate. Second joint of the flagellum nearly two and a half times longer than wide in the middle. The interocular distance on the vertex is equal to the length of the first two joints of the flagellum. Dorsum of epinotum about one and a half times longer than wide in the middle. Wings pale fuscous.

Sherbro Island, W. Africa (Dr H. Brauns).

The description given above is based on an examination of the type in coll. Brauns.

L. erythropyga Turner (Fig. 44 B, b). *Ann. Mag. N.H.* xvii (8), No. 99, p. 251, ♀. 1916.

♀, 17-20 mm. long. Black; sixth and apical half of the fifth abdominal segments red. Wings fuscous brown, with a faint violaceous tinge. Pubescence scanty, greyish on the face and clypeus, greyish yellow and short on the dorsum of the thorax, more abundant and longer on the lower surface of the thorax and on the legs. Second to fifth abdominal segments with small tufts of decumbent greyish pubescence at the sides, and a thin fringe of the same on the apical margins below. Clypeus dull, closely and fairly finely punctured. Lateral tori and face as far as the transverse sulcus behind the ocellar area, closely, sharply and finely punctured; behind the sulcus the punctures are larger and more widely spaced, becoming again closer and smaller on the back of the head. Thorax dull, closely punctured above, the spaces between the punctures somewhat shining. Sides of pronotum, mesopleurae and sides of epinotum shining, the mesopleurae more coarsely and sparsely punctured than the mesonotum, the sides of the pronotum very finely punctured. Dorsum and declivity of the epinotum sharply striato-punctate, the sides punctured almost as strongly as the mesopleurae. Abdomen shining, almost

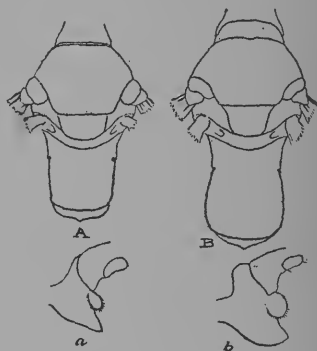


Fig. 44. A. thorax of *Larra outeniqua*; a. pronotum of *Larra outeniqua*. B. thorax of *Larra erythropyga*; b. pronotum of *Larra erythropyga*.

impunctate. Pygidial area triangular, marginate laterally, rounded at the apex, nearly smooth. Anterior margin of clypeus transverse. First joint of the flagellum twice as long as wide, very little shorter than the third, about two-thirds the length of the second. Scape and first joint of the flagellum punctured and shining, the rest pubescent and dull. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. Posterior ocelli obsolete. The transverse line behind the ocellar area not deeply impressed in the middle to form a pit. Pronotum well exposed, with a distinct collar, the dorsal face of which is about four and a half times wider than long, rounded anteriorly. Dorsum of epinotum a little wider posteriorly than at the base, as wide there as long in the middle, very little longer than the mesonotum. First and second abscissae of the radius of equal length, the third a little longer. Anterior tibiae with a row of strong spines; middle and hind tibiae strongly spinose.

Near Lake Chilwa, Nyasaland.

L. bulawayoensis Bischoff. *Arch. f. Naturges.* p. 73, ♀, ♂. 1913.

♀, 13.5 mm. long. Black; mandibles, clypeus, scape and first two joints of the flagellum, tegulae and all the femora, tibiae and tarsi reddish ochreous. Wings pale smoky brown, darker towards the apical margin. Face almost glabrous, vertex, occiput and thorax with a yellowish grey, fine and very inconspicuous pubescence. Abdomen with a scanty, very fine or almost pruinose pubescence on the first three segments. Clypeus dull, microscopically punctured. Face smooth, shining and almost impunctate. Vertex shining, sharply and fairly finely punctured. Thorax dull, the pronotum very finely, the mesonotum, scutellum and metanotum closely punctured, the punctures smallest on the metanotum. Dorsum of epinotum finely and transversely striato-punctate, the sides exceedingly finely punctulate, the declivity transversely striate. Abdomen very finely and thinly punctured, the first three segments subopaque, the rest shining. Pygidial area shining, with a few large punctures, sharply marginate laterally, the margins convex outwardly, the apex rounded, almost twice as long as wide at the base. Ventral surface of the abdomen shining, very finely punctured, and also with a few large punctures near the apical margins, the last segment closely punctured below and at the sides near the apex. Anterior margin of the clypeus arcuate. Scapes and first joint of the flagellum shining, the remaining joints dull and finely pubescent. The first joint of the flagellum is twice as long as wide, four-fifths the length of the second, the latter not longer than the third. The interocular distance on the vertex is equal to the length of the first joint plus two-thirds of the second joint of the flagellum. The transverse impression behind the ocellar area is deepened into a pit in the middle. Pronotal collar linear above, sloping steeply downwards from the pro-mesonotal suture. Mesonotum about one-third wider across the tegulae than long in the middle, as long as the dorsum of the epinotum. The latter is nearly parallel-sided, as wide as long in the middle. The abdomen is lanceolate-ovate, narrow, three times longer than wide. Anterior tibiae with spines only at the apex. Radial cell abruptly truncate. First and second abscissae of the radius subequal, the fourth equal to the first and second combined.

♂, 11.3 mm. long. Scape and first joint of flagellum ferruginous, otherwise coloured like the ♀. Pubescence longer, especially on the abdomen, which is dull, finely and closely punctured. Clypeus and face with pale silvery pubescence. The dorsum of the epinotum is more clearly transversely striated than in the ♀. Median area of the clypeus slightly produced, the anterior margin of the clypeus being shallowly concave on each side of the median area.

Interocular distance on the vertex equal to the length of the first and second joints plus half of the third joint of the flagellum. The first joint is two-thirds as long as the second, and the latter is very little longer than the third. Wings paler than in the ♀, the abdomen also less elongate. Otherwise like the ♀.

Bulawayo. January to March. A very rare species, only two males and one female having been taken within the last eleven years. Type in R.M. coll.

L. bulawayoensis, race *occidentalis* n.r.

♂, 8.7 mm. long. This differs from the type of the species only by its smaller size and by the sculpture of the dorsum of the epinotum. This is fairly strongly and transversely striate, without punctures between the striae except on the lateral margins. The interocular distance on the vertex is a trifle greater and the red colour of the legs darker.

Cameroons, W.A. (Dr H. Brauns). Type in R.M. coll.

L. outeniqua Brauns (Fig. 44 A, a), nom. in litt.

♀, 12.5 mm. Closely allied to *bulawayoensis*. Black; mandibles, lower margins of the scapes, all the femora, tibiae and tarsi, and extreme apex of last sternite, ferruginous. Wings pale smoky, the veins black. Scape and first joint of the flagellum smooth and shining, the rest of the flagellum dull and punctulate. Clypeus moderately shining, finely punctured on the posterior half, the anterior half with a few large punctures. Infrafrontal area smooth and very shining, the suprafrontal area closely punctured. Thorax dull, pronotum, metanotum and sides of the epinotum closely and finely punctured, the scutellum and mesonotum more strongly punctured. Dorsum of epinotum finely and transversely rugoso-striate and finely punctured between the rugae, the declivity transversely and very finely rugoso-striate. Abdomen shallowly and minutely punctured above, moderately shining, the segments impressed over their apical third, the ventral surface smooth, shining and very sparsely punctured. Pygidium shallowly and sparsely punctured with large punctures. Legs smooth, shining, microscopically punctured. Thorax with a thin, erect and greyish pubescence. Abdomen with marginal bands of thin, decumbent and whitish pubescence, more conspicuous at the sides than in the middle. Pubescence on the legs more or less golden.

Anterior margin of clypeus arcuate. Scapes somewhat compressed, with a trenchant edge in front. Second joint of the flagellum a little longer than the third, not quite twice as long as the first. The interocular distance on the vertex is equal to the length of the first two joints of the flagellum. Pronotal collar almost linear above. Mesonotum with a shallow median and longitudinal impression which does not reach the anterior or posterior margins. Dorsum of epinotum moderately convex transversely, as long as wide, the declivity subvertical, the brow rounded. Calcaria of posterior tibiae long. Legs strongly spinose. Anterior metatarsi with a short comb of four spines.

George, C.P. (Dr H. Brauns). Type in coll. Brauns.

L. impressifrons n.sp.

♂, 12.5 mm. long. Black; mandibles, clypeus, scapes and first two joints of the flagellum, front and middle pair of legs, and posterior tarsi ferruginous; the middle femora black at the base, the posterior tibiae ferruginous on their apical halves below; third and fourth joints of the flagellum fusco-ferruginous. Tegulae testaceous. Wings fusco-hyaline, the veins dark brown. Head and thorax with silvery pubescence, somewhat yellowish on the dorsum of the thorax, dense only on the lower face, clypeus and inferior angles of the declivity of the epinotum. Legs and abdomen with a thin greyish pubescence, forming

transverse fasciae on the apical margins of the first four tergites. Anterior third of the median area of the clypeus shining, with large scattered punctures, the rest of the clypeus dull, closely and finely punctured. Face dull, closely and fairly finely punctured; the vertex more sparsely punctured and nitidulous; the occiput closely and shallowly punctured. Mesonotum and mesopleurae closely and strongly punctured, almost dull, the punctures deep; the scutellum finely, the metanotum exceedingly finely and closely punctured. Metapleurae almost smooth. Dorsum of the epinotum dull, strongly reticulate-rugose, the declivity dull and finely rugose, the sides with very superficial, oblique striae, the spaces between the striae strongly punctured, at the base shining and finely punctured only. Abdomen dull, very minutely and fairly closely punctured. Clypeus slightly produced in the middle. Interocular distance on the vertex very little greater than the length of the first two joints of the flagellum; the second joint of the flagellum is about half as long again as the first, not longer than the third. The suprafrontal area is margined behind by a deep and wide groove which extends from eye to eye, and is continued at the orbits into the deep groove which follows the margins of the eyes as far as the middle of the temples. Thorax noticeably narrow; the mesonotum is only a trifle wider across the tegulae than long in the middle; the metanotum and epinotum together are as long as the mesonotum. The dorsum of the epinotum is as long as wide in the middle, and seen from above, the lateral margins from the stigmata onwards are moderately convex. Abdomen lanceolate, two and three-quarter times longer than wide. First abscissa of the radius twice as long as the second, the fourth as long as the second and third combined. The accessory cell long and distinctly defined. Legs feebly spinose.

Inyanga, S.R. December. 1 ♂. Type in the R.M. coll.

I have not seen the types of the following species and can only quote the original descriptions, which are far too short and too vague to make the recognition of the species possible.

L. Vollenhovia Rits. *Tijdschr. v. Entom.* xvii, p. 194, ♂. 1874.

"This species is closely related to *L. rubella* Smith, but can be easily distinguished from it by the lack of the dark margin on the wing, and the black at each side of the first segment of the abdomen. The ♂ from which the following description is made has a length of a little more than 9 mm. The head is black, broader than the thorax, and closely covered with fine points and a coarse greyish silvery pubescence. The mandibles are clear brownish red, the palpi dirty brown red, but the latter at the base black. Antennae black, and the scape is covered in front with silvery pubescence. The face and vertex are provided with impressions which are difficult to describe. The thorax is black; pro- and mesothorax together with scutellum and postscutellum closely covered with fine punctures, in the fresh condition it is probably entirely covered with greyish and somewhat glossy hairs, of which in my specimen only here and there traces are to be seen. The metathorax, which appears to be nearly vertically truncate posteriorly, is about as long as the pro- and mesothorax together. It is provided with transverse striae, and especially posteriorly covered with silvery glossy hairs. The sides are parallel, while the posterior face is provided in the middle with a narrow longitudinal carina; the posterior part of the tegulae, the venation and the stigma are brown, and the wings slightly fuscous. The legs and spurs of the tibiae are black and frosted with silvery pubescence. The spines on the legs and claws are bright brown; the abdomen is shorter than the thorax, brownish red in colour and especially on the posterior margins of the segments is covered with fine silvery pubescence."

Guinea, W. Africa.

From the description, especially in regard to the pubescence, this species is probably a *Notogonidea*.

L. rubella Smith. *Cat. Hymen. B.M.* iv, p. 280, ♀. 1856.

"Female. Length 5 lines.—Head, thorax and legs black; the face covered with bright silvery pubescence; the base of the mandibles and cheeks thinly covered with silvery pubescence; the palpi, mandibles and scape in front obscurely ferruginous. The mesothorax and scutellum closely punctured, the metathorax coarsely rugose; the wings subhyaline, their apical margins with a broad fuscous cloud, the nervures and tegulae dark ferruginous. Abdomen dark red, the basal segment more or less black at the sides; the apical margins of the segments with fasciae of silvery pubescence.

Hab. Fernando Po. (Coll. W. W. Saunders.)"

L. memnonia Smith. *Cat. Hymen. B.M.* iv, p. 281, ♀. 1856.

"Female. Length 7 lines.—Black; the face covered with silvery pubescence, the mandibles obscurely rufo-piceous, the apical joints of the palpi pale testaceous. The thorax covered with a fine silvery pile, as well as the legs; the tarsi and apex of the tibiae ferruginous; the wings fulvo-hyaline, the nervures and tegulae behind rufo-testaceous; the scutellum smooth and shining; the metathorax finely transversely striate, and having a central abbreviated carina not extending to the verge of the truncation, the striae coarser at the sides, the truncation also coarsely striated. The apical margins of the segments of the abdomen with fasciae of changeable silvery pile."

Hab. Egypt; Senegal.

This is probably a *Notogonidea*.

L. pallidipes (*L. pallipes*) Smith. *Cat. Hymen. B.M.* iv, p. 282, ♂. 1856.

"Male. Length 4 lines.—Black, and covered with a grey silky pile; the face densely covered with bright silvery pubescence; the palpi, mandibles and scape ferruginous. The mesothorax and scutellum closely punctured; the metathorax transversely rugose; a central longitudinal carina extends to the verge of the truncation; the sides of the metathorax obliquely strigose; the wings subhyaline and iridescent, the nervures and tegulae pale rufo-testaceous; the legs pale ferruginous, the coxae and trochanters fuscous; the apical margins of the segments of the abdomen slightly depressed."

Hab. Africa.

The descriptions of *L. abdominalis* Guérin (Lefebure, *Voy. Abyss.* vi, p. 358, 1848) and of *L. obscura* Magretti (*Amm. Mus. Civ. Genoa*, xxi, p. 585, ♂, 1884) are valueless, being confined almost entirely to an account of the colour and pubescence. *L. obscura* is probably a *Notogonidea*.

LARRAXENA Smith.

Ann. Mag. N.H. (2), vii, p. 30. 1851.

CHARACTERS. Like those of *Larra*, of which this is hardly more than a sub-genus, but with the following differences.

Pronotum very short, without a collar behind, depressed below the level of the mesonotum, and sloping subvertically from the pro-mesonotal suture. Second cubital cell stalked. Claws fairly long.

Only two species are known, the other, *L. princeps* Smith, being a South American insect.

L. dux Kohl (Fig. 45). *Ann. K.K.N.H. Mus. Wien*, VII, p. 220, ♀. 1892.
Ibid. IX, p. 306, ♂. 1894.

♀, 18 mm. long. Head and thorax, anterior coxae, middle and hind coxae inwardly, and antennae, excepting the first three joints, black; the scape, first and basal half of the second joints of the flagellum, mandibles, legs and abdomen, ferruginous (pale burnt sienna); wings pale fuscous, with a violaceous lustre, the veins black. Clypeus, face and back of the head with a thin, greyish silvery pubescence, thorax with very short and sparse pale brownish pubescence. Abdomen nearly glabrous, the first segment with a little pubescence near the base, the legs with thin yellowish pubescence. Head and thorax, excepting the epinotum, strongly punctured, the punctures deep but not large, the spaces between them shining.

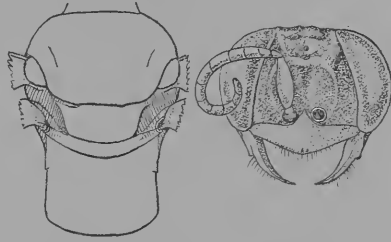


Fig. 45. Thorax and head
of *Larraxena dux*.

The puncturation of the clypeus, sides of face, lateral margins of the mesonotum and on the metanotum closer than elsewhere; these parts are dull. Dorsum and declivity of the epinotum dull, the former closely reticulate, the sides smooth and shining anteriorly and below, obliquely striated and sparsely punctured posteriorly. Abdomen shining; first segment very sparsely and finely, the basal half of the second more closely punctured, the remaining segments smooth and impunctate; the apical margins of the segments shallowly impressed; the pygidial area elongate-triangular, a little longer than wide at the base, the apex narrowly rounded, sparsely pilose, feebly convex and marginate at the sides.

Inner margins of the mandibles without teeth, the apex acute, the outer margin excised near the base and fringed with a row of short hairs. Clypeus broad, fairly flat, the anterior margin convex. Scapes thickest a little above their base, the second joint of the flagellum about half as long again as the first, very little longer than the third. Interocular distance on the vertex about equal to the length of the first two joints of the flagellum. Face with longitudinal tori on each side connected by a less pronounced transverse torus below the flat anterior ocellus, as in *Notogonidea*. The posterior ocelli are small and elongate. Pronotum very short, linear above posteriorly. Mesonotum as long as the metanotum and epinotum taken together; a short, oblique and impressed line lies on each side near the lateral margins. A median, longitudinal, thin and shallow line runs from the back of the mesonotum to the epinotum, whence it is continued almost to the brow of the declivity. The latter is feebly marginate; dorsum of epinotum nearly parallel-sided, slightly widened posteriorly, one and a half times wider at the base than long, the sides and declivity vertical. First abdominal segment vertical at the base, the abdomen stout, widest across the second segment, where it is wider than the thorax across the tegulae. Femora distinctly swollen; all the tarsi and the middle and hind tibiae strongly spinose, the anterior tibiae with a row of feeble spines on its upper side, the anterior metatarsus with several spines irregularly spaced on its outer half. First and second abscissae of the radius subequal, each a little longer than the third; the first and second transverse cubital cells coalesce before meeting the radius, thereby forming a short stalk to the second cubital cell; the recurrent veins received in the proximal half of that cell.

♂, 14.5 mm. long. Only the first and second joints of the antennae ferruginous. Puncturation on the mesonotum somewhat coarser than in the ♀.

Abdomen dull, distinctly but finely pubescent, finely and not very closely punctured, the first segment more sparsely punctured than the rest. Pygidial area trapezoidal, the apical margin feebly concave, more strongly punctured than the rest of the abdomen. Interocular distance on the vertex equal to a trifle more than the length of the first two joints of the flagellum. The joints of the latter are shorter than in the ♀, the second nearly twice as long as the first. Legs not so strongly spinose. Otherwise like the ♀. (Described from the type of the ♂, coll. Brauns.)

Batta, W. Africa; Bulawayo. May. A very rare species, of which I have found only two females in the last ten years.

In the shape of the face and epinotum this genus does not differ from *Larra*; in fact, the only marked difference lies in the petiolate second cubital cell; the short pronotum, devoid of a posterior raised portion or collar, is a feature also present in some species of *Larra*.

NOTOGONIDEA Rohwer.

(*Notogonia*) A. Costa. *Ann. Mus. Zool. Napoli*, pp. 80 and 82. 1867.
Rohwer. *Proc. Ent. Soc. Washington*, XIII, p. 234. 1911.

(It is unfortunate that Costa's name for the genus, so long in use, must be abandoned, since it is pre-occupied for a genus of Crustaceans.)

CHARACTERS. Eyes reaching the base of the mandibles. Anterior ocellus round and convex, posterior ocelli flat, elongate and placed close together, almost touching. Mandibles excised on their lower margins, the inner margin with one or two teeth, the apex simple.

Face with longitudinal and transverse tori as in *Larra*, but the introfrontal area is pubescent, not glabrous and shining as in *Larra*. Pronotum short, usually linear above posteriorly and depressed below the level of the mesonotum but sometimes with a short collar. No epicnemium; episternal suture distinct. Epinotum more or less parallel-sided, nearly vertical at the sides and behind, without a dorsal field. Abdomen with fine pubescence, often arranged in a chequered pattern on each segment. Punctuation of the body usually fine. Second sternite subcarinate in the middle at the base, with a dull, round and flattened area on each side of the carina. Pygidial area distinct in the ♀, its sides convergent apically, covered with fine pubescence or stiff hairs or glabrous, the apical edge often margined with a row of short spines. Pygidial area rarely distinct in the ♂. Legs fairly long, tibiae and tarsi strongly spinose, the posterior tibiae longitudinally carinate. Tarsal comb in the ♀ composed of long spines or cilia. Claws usually long, rarely dentate. The hind femora in the ♂ are often bluntly angulated near the base. The suprafrontal area is not defined posteriorly by a deep biconcave line or groove as in *Larra*, but only by a thin, shallow and open V-shaped line, which rarely reaches the orbits on either side.

Distribution. Both hemispheres. These sand-wasps prey chiefly on crickets.

In the introduction to Part I, I expressed the view that the genus *Motes* Kohl could not be maintained, a view which has been strengthened by further consideration of the genus *Notogonidea*. (In the key to the genera, p. 108, paragraph (66) 67, an error needs correction. The last line of the paragraph "Second ventral plate simple" applies only to *Larra*, and not to *Motes* which has that segment formed as in *Notogonidea*.) Kohl erected the genus on the species *N. odontophora* and *N. cyphononyx*, basing the separation chiefly on the following characters. Absence of teeth on the inner margin of the mandibles; presence of teeth on the claws; narrow and almost parallel-sided pygidial area,

without apical setae. However, some undoubted species of *Notogonidea*, e.g. *croesus*, *Neavei*, *dentipes* and *denticulata* have teeth on the claws, and a narrow and subparallel-sided pygidial area is not wanting in some others, e.g. *griseola*, and the terminal setae are very poorly developed in yet others. Yet another character, the absence of a pile or pubescence on the abdomen, is also not always applicable, since *N. bidentata*, a species which on the strength of the other characters would certainly be placed under *Motes*, has a cinereous pile on the first three tergites. There remains, therefore, only one character, the absence of teeth on the inner margins of the mandibles, which serves to separate the species of the *Motes* group from *Notogonidea* proper, a character which it shares with *Larra*. However, they cannot be placed with the latter genus, on account of the structure of the epinotum, in which the dorsum is narrower at the apex than at the base. In the following pages I shall therefore include in *Notogonidea* all the species which have hitherto been assigned to *Motes*.

For the separation of the species, the following are the more important characters in the ♀. The shape of the pygidial area; the character of the pubescence of that area; the colour of the wings and of the pubescence on the body; the structure of the claws, whether armed with teeth or not; the interocular distance on the vertex; and the sculpture of the dorsum of the epinotum.

In the ♀ the pubescence of the pygidial area is sometimes worn away by use in her digging operations, but rarely so completely as to lead one to mistake it for one of those species in which that segment is naturally naked. Of far less value for the separation of the species are characters based on the shape of the clypeus, the venation, the spines on the anterior tarsi and the strength of the longitudinal carinae on the posterior tibiae. In the male sex there is far less differentiation than in the female.

The species of the *sepulchralis* group form a complex of closely allied forms, difficult to distinguish. I do not think it is possible to include them all under the one name *sepulchralis* Gerst., without making the definition of that species too vague to be of use, and moreover, there is some uncertainty in my own mind as to the identity of Gerstaecker's species. His description is totally inadequate, consisting of not more than a sentence briefly describing the colour and pubescence. An examination of his type is essential, but as I have not seen it and do not know where it is to be found, I have based my recognition of the species on the specimens in the Brit. Mus. coll. which have been so named by Mr R. E. Turner.

KEY TO THE SPECIES OF *NOTOGONIDEA* ♀♀.

- (24) 1. Wings dark fuscous, or flavo-hyaline and with or without a fuscous apical margin.
- (9) 2. Wings dark fuscous, sometimes flushed with violet.
- (6) 3. Large species, more than 13 mm. long.
- (5) 4. Median area of clypeus subrectangularly produced in front; pygidial area very coarsely punctured; wings dark, with a strong violaceous lustre; 21 mm. long. Gowdeyi Turner
- (4) 5. Median area of clypeus produced very little beyond the lateral pieces; pygidial area closely and more finely punctured; wings paler, barely violaceous; 18 mm. long. nugax Kohl
- (3) 6. Smaller species, not more than 13 mm. long.
- (8) 7. Anterior tarsi with short simple spines; scapes red. rufoscapa Cameron
- (7) 8. Anterior tarsi with a comb composed of long, flattened spines (slightly concave in transverse section); scapes black. ciliata Smith

- (2) 9. Wings flavo-hyaline, with or without a fuscous apical margin.
- (13) 10. Tarsal claws armed with a tooth near the middle.
- (12) 11. Wings very pale flavo-hyaline; scapes, tegulae, anterior tibiae and middle and hind tibiae underneath, ferruginous; 14 mm. long.
dentipes Turner
- (11) 12. Wings strongly flavo-hyaline, with a dark apical border; scapes and tibiae blackish; 20 mm. long, or more.
croesus Smith
- (10) 13. Claws unarmed.
- (17) 14. Whole body with a strongly golden pubescence, which on the abdomen is similar to that of *Liris haemorrhoidalis*; all the legs bright ferruginous.
- (16) 15. Antennae long and slender; interocular distance on the vertex equal to the length of the second joint of the flagellum; 16 mm. long.
pseudoliris Turner
- (15) 16. Antennae not very long and slender; interocular distance equal to the length of the second plus half of the third joint of the flagellum; 21 mm. long.
primania Kohl
- (14) 17. Pubescence not strongly golden.
- (21) 18. At least a part of the abdomen red.
- (20) 19. First three and the greater part of the fourth abdominal segments black, the two apical segments, the legs, scapes and first two joints of the flagellum, red.
bembesiana Bischoff
- (19) 20. Abdomen red, the second and third tergites moderately infuscated.
sericosoma Turner
- (18) 21. Abdomen entirely black.
- (23) 22. Legs all black; wings strongly flavo-hyaline.
irrorata Smith
- (22) 23. Posterior femora red; wings pale flavo-hyaline.
solstitialis Smith
- (1) 24. Wings hyaline, or very pale fusco-hyaline, sometimes with a darker apical margin.
- (30) 25. All the legs (excluding the coxae and trochanters) red.
- (27) 26. Abdomen in greater part fusco-ferruginous; dorsum of the epinotum with strong, elliptical and concentric rugae.
Braunsi Arnold
- (26) 27. Abdomen black; dorsum of epinotum with fine transverse striae.
- (29) 28. Pygidial area with pale greyish golden pubescence, the apical setae yellow.
thysanomera Kohl
- (28) 29. Pygidial area with brownish pubescence, the apical setae dark red.
thysanomera, race *usambarensis* Cameron
- (25) 30. Legs not entirely red.
- (38) 31. Inner margins of the mandibles edentate; claws armed with teeth (*Motes* Kohl).
- (33) 32. Claws with two small teeth placed side by side near the middle of the claw.
bidentata Arnold
- (32) 33. Claws with only one tooth.
- (37) 34. Interocular distance on the vertex equal to the length of the first two joints of the flagellum or very nearly so; abdomen with some red colour.
- (36) 35. Interocular distance slightly less than the length of the first two joints of the flagellum, but equal to that of the second and third; apical segment of the abdomen red.
odontophora Kohl
- (35) 36. Interocular distance equal to a little more than the length of the first two joints of the flagellum; abdomen all red, the first and second segments sometimes partially infuscated.
cyphononyx Kohl
- (34) 37. Interocular distance on the vertex less than the length of the first and second joints of the flagellum, but equal to that of the third; abdomen black.
rugifera Turner
- (31) 38. Inner margins of the mandibles with one or two teeth.
- (42) 39. Claws armed with one tooth near the middle.
- (41) 40. Femora and tibiae ferruginous; 11 mm. long.
denticulata Turner
- (40) 41. Femora and tibiae black; 16 mm. long.
Neavei Turner

- (39) 42. Claws unarmed.
- (44) 43. Dorsum of epinotum coarsely reticulate-rugose transversely.
nigricans Wlk., race *palumbula* Kohl
- (43) 44. Sculpture of the dorsum of epinotum not coarsely reticulate-rugose.
- (50) 45. Pygidial area glabrous.
- (47) 46. Pygidial area very shining, finely and sparsely punctured, long and narrow, at least two and a half times longer than wide at the base.
pompiliformis Panzer
- (46) 47. Pygidial area shorter.
- (49) 48. Pygidial area black, dull, finely and closely punctured at the base, the apical half with larger and sparser punctures; anterior margin of clypeus obtusely angulated in the middle; 16 mm. long. *simulatrix* Arnold
- (48) 49. Pygidial area pale ferruginous, shining, with widely spaced, large and deep punctures; anterior margin of clypeus nearly straight, with a narrow excision in the middle; 7.5 mm. long. *miscophoides* Arnold
- (45) 50. Pygidial area not entirely glabrous, at least the apical fourth pubescent.
- (54) 51. Small species, 8 mm. long, or less; legs feebly spinose.
- (53) 52. Second joint of the flagellum one and a half times longer than the first; tarsi pale ferruginous, the basal joints fuscous towards the base; dorsum of epinotum finely coriaceous, with a few wavy longitudinal rugae superimposed; pubescence scanty on the thorax, and on the abdomen confined to the apical margins of the first three tergites.
minima Arnold
- (52) 53. Second joint of the flagellum twice as long as the first; tarsi blackish, the apical joint reddish; dorsum of epinotum microscopically reticulate-rugulose; pubescence long and abundant on the thorax; the first four tergites with wide pubescent fasciae covering the apical halves of the segments.
gracilicornis Arnold
- (51) 54. Larger species, more than 11 mm. long; legs strongly spinose.
- (56) 55. Pygidial area nearly twice as long as wide at the base, subelliptical, rounded at the apex, densely clothed all over with a fine, silky, pale brownish yellow pubescence, completely obscuring the sculpture; 16 mm. long.
griseola Arnold
- (55) 56. Pygidial area shorter, subtriangular, with the apex rounded or truncate, not covered with dense silky pubescence, but with short decumbent setae (plainly recognisable with a magnification of 25 diameters).
- (60) 57. Only the first three tergites with apical fasciae of silvery pile.
- (59) 58. Dorsum of epinotum finely, evenly and transversely striated; pygidial area black, with eight black apical spines.
felina Arnold
- (58) 59. Dorsum of epinotum microscopically reticulate, without striae; extreme apex of pygidial area fusco-ferruginous, with six apical spines of the same colour.
angustiventris Arnold
- (57) 60. First four tergites with apical fasciae of silvery pile (dorsum of epinotum sculptured very much like that of *N. felina* but more closely striated).
sepulchralis Gerst.

N. Gowdeyi Turner (Fig. 46). *Trans. Ent. Soc. London*, p. 751, ♀, ♂. 1913.

♀, 21 mm. long. Black; mandibles at the base, the anterior half of the median area of the clypeus, and the scapes, dark ferruginous; tarsi piceous; wings dark fuscous with a strong violaceous lustre. Face and temples with thin greyish pubescence, the rest of the head and the thorax with sparse brownish hairs, the sides and declivity of the epinotum with brownish yellow and fairly long pilosity. Abdomen bare. Head and thorax dull. Anterior margin of the median area of the clypeus coarsely and sparsely punctured, the rest of the head microscopically and closely punctured. Mesonotum and scutellum very finely and closely punctured, the mesonotum with a raised line on each side, between the middle and outer margin and extending back to

near the base. Dorsum of the epinotum and also the declivity transversely and finely rugoso-striate, reticulate between the rugae. Sides of thorax microscopically sculptured. Abdomen smooth, with a slight gloss; sixth segment coarsely punctured above and below, its pygidial area longer than wide at the base, clothed with dark reddish brown bristles.

Median area of clypeus large, produced in front, its anterior margin transverse, with a narrow median excision. Interocular distance on the vertex hardly more than twice as long as the first joint of the flagellum. Antennae noticeably long and slender, the second joint longer than the third, fully three times longer than the first. Dorsum of the epinotum as long as the mesonotum, as long as wide at the base, without a median carina, the edge between it and the declivity slightly raised in the middle. Spines on the legs blackish, the anterior metatarsus with six long spines. First abscissa of the radius longer than the second or third, the latter a little longer than the second, the distance between the recurrent veins on the cubitus equal to the second abscissa of the radius.

“♂, 14 mm. long. Antennal joints shorter than in the ♀, the eyes separated on the vertex by a distance equal to the length of the two basal joints of the flagellum; apex of the dorsal segment with a very indistinct marginal band of greyish pubescence; apical dorsal segment closely punctured; shallowly emarginate at the apex.”

Entebbe, Uganda.

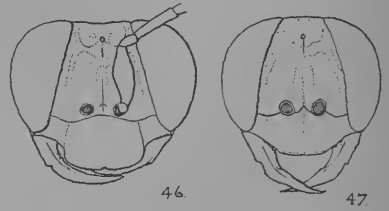


Fig. 46. Head of *N. Gowdeyi*.
Fig. 47. Head of *N. nugax*.

N. nugax Kohl (Fig. 47). *Ann. K.K.N.H. Mus. Wien*, ix, p. 302, ♂. 1894.
N. pilosifrons Turner. *Ann. Mag. N.H.* xvii (8), No. 99, p. 252, ♀. 1916.
N. Dixeyi Bingham. *Trans. Ent. Soc. London*, p. 377. 1912.

♀, 16–17 mm. long. Very similar to *irrorata* Smith. Black; the tarsi piceous. Sometimes the scape, the tarsi, front and middle tibiae at the base and apex, and the apex of the pygidium are dark reddish. Wings dark fuscous with a very faint violaceous sheen, the veins black. Head with golden pubescence as in *irrorata*. Mesonotum with a thin dark brownish yellow or brown pubescence on its margins. Epinotum with very short, pale yellowish grey pubescence on the sides and declivity. Abdomen with pruinose fasciae on the first three tergites as in *irrorata*. Sculpture as in that species, but the pygidial area is smooth and shining at the base, closely and fairly strongly punctured elsewhere, the apex more widely truncate than in *irrorata*, and furnished with a row of eight reddish brown setae. Otherwise like *irrorata*.

♂, 12–13 mm. long. The colour of the legs and scapes is variable. It may be all black, or the extent of the red may range so far that all the legs, excepting the coxae, trochanters and the inner side of the base of the femora, are entirely ferruginous. The second joint of the flagellum is about one-third longer than the first. The interocular distance on the vertex is nearly equal to the length of the first two joints of the flagellum. Last dorsal segment of the abdomen trapezoidal, nearly twice as wide at the base as long, the apical margin transverse and rounded at the corners, finely punctured and pubescent. Wings paler than in the ♀.

Natal; Bulawayo; Nyasaland.

Possibly only a race of *irrorata*.

N. irrorata Smith. *Cat. Hymen. B.M.* iv, p. 284, ♀. 1856.

N. fraudulenta Kohl. *Ann. K.K.N.H. Mus. Wien*, ix, p. 303. 1894.

♀, 16–17 mm. long. Black; the tarsi brownish black. Wings flavo-hyaline, with a pale fuscous apical margin, the veins testaceous. Clypeus and face with dense, pale golden pubescence, temples and vertex with thinner pubescence. Pronotum posteriorly, the mesonotum more especially on its margins, and the epinotum on the sides and the declivity, with thin, pale golden pubescence. Dull, almost smooth, the sculpture microscopic except on the dorsum and declivity of the epinotum which are feebly and transversely striate, and the fifth and sixth sternites, which are shining and fairly coarsely punctured.

Anterior margin of the clypeus convex, shining, with a pre-apical row of large punctures. Second joint of the flagellum about two and a half times longer than the first, very little longer than the third. Interocular distance on the vertex about one and three-quarter times longer than the first joint of the flagellum. The dorsum of the epinotum has a fine median carina which ends before the posterior margin. Apical margins of the first three tergites with transverse fasciae of greyish silvery pile. Pygidial area like that of *N. croesus*. First abscissa of radius about equal to the third, very little longer than the second. The recurrent veins coalesce at their junction with the cubitus.

Senegal to Uganda.

N. rufoscapa Cameron. *Records Albany Mus.* p. 321, ♀. 1905.

♀, 11–12 mm. long. Black; scapes and basal half of the mandibles dark red; tarsi pale ferruginous, the basal joints more or less fuscous; the last three joints of the flagellum dark reddish brown. Wings dark fuscous, the veins black. Lower half of the face and the clypeus with a thin greyish silvery pubescence; thorax with a very scanty greyish pubescence, first three tergites with apical bands of greyish silvery pile. Head and thorax exceedingly finely and closely punctured and dull, the anterior margin of the clypeus depressed and shining. Dorsum of epinotum dull, microscopically reticulate-punctate, the declivity finely and transversely striate and dull, the sides of the epinotum almost smooth and dull, finely striated near the inferior margin; the lateral margins of the dorsum posteriorly and of the declivity superiorly with a few short transverse striae. Abdomen dull above, shining and sparsely punctured below, except the two basal sternites which are more finely punctured and subopaque. Pygidial area subtriangular, the apex rounded, sharply and finely and not very closely punctured, the apex with some black spines. Interocular distance on the vertex almost equal to the length of the first two joints of the flagellum; the second joint two and a third times longer than the first and as long as the third. Dorsum of epinotum as long as the mesonotum, as long as wide at the base. Anterior metatarsi with four spines.

Dunbrody, C.P. (O'Neil); Willowmore, C.P. (H. Brauns).

I have seen the type in the Transvaal Museum's coll. The anterior metatarsi have four spines on the outer margin, and not three as stated by Cameron. An omission of three words in his description requires correction; the sixth line, to make sense, should read as follows: "the 1st transverse cubital and the 1st recurrent *nervure*; the recurrent *nervures* are."

Cameron's type has the recurrent veins united at their junction with the cubitus, but that character is unstable, since in the specimens from Willowmore they are slightly separated.

♂, 9 mm. long. Antennal joints a little shorter than in the ♀. Interocular distance on the vertex equal to twice the length of the second joint of the flagellum. Eighth sternite widely emarginate at the apex; seventh tergite trapezoidal. Otherwise like the ♀.

N. ciliata Smith (Fig. 48). *Cat. Hymen. B.M.* iv, p. 283, ♀. 1856.

♀, 11–12.5 mm. long. Black; the middle third of the mandibles and sometimes the last four tarsal joints dark reddish brown. Wings fusco-hyaline, with a darker apical border beyond the cells. Clypeus and face with dull silvery pubescence, the rest of the head and thorax with a very short greyish pubescence, very sparse on the middle of the thorax, more dense and longer on the sides of the mesonotum and epinotum. Abdomen and legs with a pruinose bloom, denser and forming transverse apical fasciae on the first three tergites. Dull. The head microscopically rugulose-punctate, the thorax very finely and closely punctured, the dorsum and declivity of the epinotum transversely and fairly closely striate, the sides more sharply and subvertically striate. The pygidial area is closely punctured, clothed with short golden pubescence, elongate-triangular, the apex rounded and margined with a row of six to eight dark brown setae. Anterior margin of the clypeus convex. Antennal joints fairly short, the first a little more than half as long as the second. Interocular distance on the vertex equal to the length of the first and second joints of the flagellum. Pronotum not abruptly declivous behind as in most species of this genus but with a distinct collar, the outer angles of which are subrectangular. Mesonotum rather short, one and a half times wider than long; dorsum of epinotum one-third longer than the mesonotum, not much wider at the base than long. Legs strongly spinose, the spines black, the inner calcar of the hind tibiae nearly as long as the hind metatarsus. Anterior tarsi with a comb composed of long flattened spines, somewhat concave in cross-section, the basal joint with five spines on the outer margin, the first two of which are short and sometimes not flattened. First and third abscissae of the radius subequal, the second short or about one-third as long as the first.

♂, 10 mm. long. Antennal joints a little shorter than in the ♀. Pubescence longer and more abundant on the thorax, the transverse fasciae on the abdomen wider and brighter. The interocular distance on the vertex fully as great as in the ♀, about equal to the length of the first three joints of the flagellum. Sides of the epinotum less strongly striated. Spines of the tarsal comb not flattened, the first joint with only four spines on the outer margin. Seventh tergite covered with grey pubescence, rounded at the apex; eighth sternite rounded at the apex and feebly emarginate there in the middle. Otherwise like the ♀.

Natal; Willowmore, C.P.; Bulawayo and Sawmills, S.R. November to February. (T.M. and R.M. colls.)

N. dentipes Turner. *Ann. Mag. N.H.* xx (8), No. 118, p. 294, ♀. 1917.

“♀. Nigra; scapo, tegulis, tibiis anticis, tibiisque intermediis posticisque subtus ferrugineis; clypeo, fronte, mesonotoque lateribus aureo-pubescentibus; segmento mediano sparse, pleuris, segmentisque dorsalibus 1–3 fascia apicali pallide aureo-pubescentibus; area pygidiali fusco-ferrugineo-setoso; alis pallidissime flavo-hyalinis venis ferrugineis. Long. 14 mm.”

“♀. Clypeus shining on the apical margin and subtruncate. Second and third joints of the flagellum subequal; eyes separated on the vertex by a distance not quite equal to the length of the second joint of the flagellum. Thorax subopaque, smooth; median segment very little longer than the breadth in the middle, slightly convex, indistinctly transversely striated, with a low carina from the base not quite reaching the apex, the surface of the posterior truncation with a median sulcus and with transverse striae at the



Fig. 48. Wing and foreleg of *N. ciliata*.

sides. Abdomen opaque; pygidial area triangular, narrowly rounded at the apex, finely rugose. Tarsal comb short; four spines on the fore metatarsus; a small blunt tooth on the middle of each tarsal unguis. Fourth abscissa of the radius as long as the first, a little longer than the second and third combined; the second very short, but a little longer than the space between the recurrent nervures on the cubitus. Radial cell narrowly truncate at the apex.

Hab. Obuasi, Ashanti (Dr W. M. Graham)."

N. croesus Smith. *Cat. Hymen. B.M.* iv, p. 284, ♀. 1856.

Motes deceptor Turner. *Ann. Mag. N.H.* xvii (8), No. 99, ♀. 1916.

Notogonia deceptor Turner. *Ibid.* xix (8), No. 112. 1917.

Kohl. *Ann. K.K.N.H. Mus. Wien*, ix, p. 300, ♀, ♂. 1894.

♀, 17-20 mm. long. Black; the tarsi and all the spines on the legs dark ferruginous; apical abdominal segment piceous. Wings yellow, with a broad dark fuscous apical border, which also extends over the apex of the hind wing, veins ochreous.

Head, posterior margin of the pronotum, the mesonotum, dorsum and declivity of epinotum clothed with a fairly dense, dark golden pubescence, decumbent on the head and pro-mesonotum, longer, outstanding and somewhat woolly on the epinotum. Legs and the first four tergites with a very fine pale brassy golden pubescence or pile; on the abdomen the pubescence is arranged in a chequered pattern similar to that of *Liris haemorrhoidalis*. The fifth segment with brownish pubescence, the pygidial area triangular, longer than wide at the base, marginate at the sides, clothed with brownish golden pubescence, the apical margin armed with a row of four or five short and dark red spines.

Sides and ventral surface of thorax and the first three sternites with a microscopic yellowish grey pubescence. Dull, microscopically sculptured, the dorsum and declivity of the epinotum transversely striate, the fourth to sixth sternites shining and sparsely punctured. Anterior half of clypeus shining, with a pre-apical row of punctures behind the convex anterior margin, which has a small semicircular excision in the middle. Second joint of the flagellum twice as long as the first, as long as the third. The interocular distance on the vertex not quite equal to the length of the second joint of the flagellum. Mesonotum slightly concave lengthwise in the middle anteriorly. Dorsum of epinotum as long as the mesonotum, and as long as wide at its apex, convex transversely, the declivity subvertical. Anterior metatarsus with 4 long spines. All the claws with a blunt tooth near their middle.

♂, 14 mm. long. Colour of wings paler, ventral surface of abdomen entirely dull, otherwise like the ♀ in sculpture, colour and pubescence. The anterior margin of the clypeus is obtusely angular in the middle. The interocular distance on the vertex is about equal to the length of the second joint of the flagellum. Seventh tergite trapezoidal, clothed with pale golden pubescence, the apical margin shallowly emarginate in the middle. Legs not so strongly spinose as in the ♀, the claws unarmed. Otherwise like the ♀.

Widely distributed. Africa from Gambia to Kenya and south to Natal. (R.M. and T.M. colls.)

N. primania Kohl. *Ann. K.K.N.H. Mus. Wien*, ix, p. 301, ♀. 1894.

♀, 21 mm. long. Black; legs and abdomen ferruginous, anterior margin of clypeus and the mandibles at the base, reddish brown; wings flavo-hyaline, the apical third fuscous and faintly tinged with violaceous. The whole body, excepting the apical abdominal segment, clothed with a dense brassy golden pubescence, similar to that of *Liris haemorrhoidalis*. Head and thorax micro-

scopically and closely punctured. Dorsum and declivity of epinotum strongly and transversely striate, the sides obliquely so. Pygidial area closely punctured, clothed with short, dull and golden brown hairs, intermixed with a few longer and darker hairs, the apical margin with a row of eight dark amber-coloured setae. Anterior margin of the clypeus convex. Interocular distance on the vertex equal to the length of the second and half of the third joints of the flagellum. The second joint is about two and a half times longer than wide. The spines of the anterior tarsi are long and flattened, like those of *N. ciliata*. There are two such spines at the apex of the basal joint, two each on the second and third joints, and two shorter and round ones on the fourth joint (from an examination of the type in coll. Brauns; there are not five flattened spines on the first joint, as stated in Kohl's description, nor can I see any trace of the other three ever having been there). First abscissa of the radius a little shorter than the third, and about three times as long as the second, the latter very little shorter than the space on the cubitus between the recurrent veins.

Here and there on the abdomen there is a tendency for the red colour to merge into black, and probably the colour of the abdominal chitin varies considerably.

Junk River, Liberia. Type in coll. Brauns.

N. pseudoliris Turner. *Trans. Ent. Soc. London*, p. 750, ♀. 1913.

♀, 16 mm. long. Black; the base of the mandibles, the antennae, legs, tegulae, fifth and sixth abdominal segments, bright ferruginous; the apical margins of the first four segments testaceous. Wings flavo-hyaline, the apical third lightly infusate, the veins testaceous at the base, brown in the fuscous area. Densely clothed with a bright brassy golden pubescence, similar to that of *Liris haemorrhoidalis*, but differing in the arrangement of the pubescence which is not arranged in a chequered pattern, the hairs are directed obliquely outwards from the middle line over the whole segment from base to apex. Head and thorax (under the pubescence) dull, closely and microscopically punctured, the dorsum and declivity of the epinotum transversely and closely striate or aciculate, the sides obliquely and feebly striate.

Antennae long and slender, the second joint of the flagellum as long as the scape, about three times longer than the first, and as long as the third. Anterior margin of the clypeus feebly convex. Interocular distance on the vertex nearly equal to the length of the second joint of the flagellum. Dorsum of the epinotum a little longer than the mesonotum, as long as wide at the base (in the specimen before me, det. Turner, this is the length, and not "much longer than the basal width" as stated in his description). Pygidial area elongate-triangular, narrowly rounded at the apex, closely punctured and sparsely pubescent. Tarsi slender, with thin and short spines, not forming a distinct comb on the anterior tarsi. The inner calcar of the hind tibia black, only half as long as the basal joint of the hind tarsus. Ventral surface of the abdomen dull.

Entebbe, Uganda.

N. bembesiana Bischoff. *Archiv. f. Naturges.* p. 71, ♀, ♂. 1913.

♀, 13-17 mm. long. Black; the scape and first two joints of the flagellum, the legs, the fifth and sixth tergites and sometimes also the apical margin of the fourth, the fifth and sixth and greater part of the fourth sternites, bright ferruginous (pale burnt sienna); the apical margins of the first three abdominal segments more or less reddish brown. The middle and hind coxae and trochanters sometimes entirely red, or more or less marked with black. Spines on the legs ferruginous, the posterior calcaria piceous. Wings flavo-hyaline,

with an apical brown border which extends inwards as far as the base of the radial, second cubital and outer half of the discoidal cells; the veins yellow, brown in the clouded part. Mandibles reddish brown, the apex black. Anterior margin of clypeus ferruginous. Clypeus and face with a yellowish silvery pubescence; back of the head and the thorax with a thin, adpressed and pale yellow pubescence, fairly scanty. Upper surface of the abdomen with a very fine pale greyish golden pubescence. The apical margins of the fourth and fifth tergites and of the second to fifth sternites with a few reddish, exserted hairs. Pygidial area with short reddish hairs, and an apical row of seven or eight setae of the same colour. Head and thorax exceedingly finely and closely punctured, the mesopleurae almost microscopically so, the anterior margin of the clypeus, the vertex, pronotum and mesonotum slightly shining (this feature is masked by the pubescence). Epinotum dull, the sides obliquely and strongly striate, the dorsum and declivity transversely striate, the striae on the dorsum thin and feeble except at the lateral and posterior margins, the spaces between the striae closely reticulate-punctate. Abdomen rugulose, the pygidial area closely punctured with elongate punctures, the third and following sternites slightly shining, sparsely punctured, the punctures increasing in size towards the apical segment. Anterior margin of the clypeus moderately convex. Interocular distance on the vertex equal to the length of the first two joints of the flagellum (not of the second plus half the first as stated by Bischoff, who also incorrectly says that the second joint is longer than the third; they are of equal length).

Collar of pronotum obsolete in the middle, distinct at the sides, with subrectangular shoulders. Mesonotum nearly one and a half times wider across the tegulae than long in the middle; the epinotum not much narrowed posteriorly, a little longer than the mesonotum and as long as wide in the middle. Pygidial area one-third longer than wide at the base, the apex rather widely rounded. Inner calcar of the hind tibia nearly as long as the hind metatarsus. Legs strongly spinose, the anterior pair with a distinct tarsal comb composed of flattened and long spines, of which there are five on the basal joint. Radial cell widely truncate, the first and third abscissae of the radius subequal, the second less than half as long as the first, and usually shorter than the space on the cubitus between the recurrent veins.

♂, 12–15 mm. long. Wings paler than in the ♀. Scape and first joint of the flagellum, or sometimes only the scape, ferruginous. Pubescence on the thorax more yellowish, longer and more tomentose than in the ♀, especially on the epinotum. Shoulder of the pronotum less angular than in the ♀. Seventh tergite widely rounded at the apex, eighth sternite narrowly excised in the middle. Legs less strongly spinose. Otherwise like the ♀.

Bembesi, Bulawayo, Sawmills, Matopos and Driefontein, S.R. October to January. Type in Berlin Museum. (R.M. and T.M. colls.)

N. sericosoma Turner. *Trans. Ent. Soc. London*, p. 752, ♀. 1913.

“♀. Nigra; mandibulis, clypeo apice, antennis, tegulis, pedibus, abdomine, segmentis dorsalibus secundo tertioque modice infuscatis, ferrugineis; alis pallide flavo-hyalinis, limbo apicali pallide infuscato, venis testaceis, capite, thorace, abdomineque pallide aureo-sericeis. Long. 13 mm.”

“♀. Clypeus subtruncate at the apex, not emarginate in the middle. Second joint of the flagellum equal in length to the third, about two and a half times as long as its breadth in the middle. Eyes separated on the vertex by a distance half as great again as the length of the second joint of the flagellum. Comb of the fore tarsi long and stout, six spines on the outer margin of the basal joint. Median segment finely transversely striated, the apex almost

smooth, the sides finely striated, the segment longer than its breadth at the base, slightly convex, and without a median carina. Sixth dorsal segment closely punctured and covered with very fine pale golden pubescence. Tarsal unguis long, without a tooth. Second abscissa of the radius nearly as long as third; first recurrent nervure received distinctly nearer to the basal angle of the second cubital cell than to the second recurrent nervure. The whole dorsal surface except the middle of the median segment is covered more or less closely with very fine pale golden pubescence, which in some lights becomes almost silvery.

Hab. British East Africa, near Wangi, coast of mainland (S. A. Neave). February. Type in B.M."

N. solstitialis Smith. *Cat. Hymen. B.M.* IV, p. 283, ♀. 1856.

N. cnemophila Cameron. Sjöstedt, *Kilimandjaro-Meru Exped.* p. 288, ♀. 1910.

♀, 17 mm. long. Black; the posterior femora ferruginous. Clypeus and face with short and dense silvery pubescence, the rest of the body and legs covered with a dense and exceedingly fine pruinose bloom, somewhat yellowish on the mesonotum and epinotum, and forming more conspicuous transverse and silvery grey fasciae on the apical margins of the abdominal segments. Wings flavo-hyaline, the apical third moderately fuscous, the veins ochreous. The spines on the middle and hind legs dark reddish brown. Dull, microscopically punctured; the epinotum obliquely striate at the sides, transversely on the declivity and dorsum, the striae on the latter almost effaced except on the lateral margins. Last three sternites sparsely punctured and shining, the pygidial area finely and closely punctured, dull and clothed with short golden hairs. Anterior margin of the clypeus moderately convex. Second joint of the flagellum two-thirds longer than the first, and as long as the third. The interocular distance on the vertex is about equal to the length of the second joint of the flagellum. Dorsum of epinotum as long as the mesonotum, as long as wide across the middle, the lateral margins behind the stigmatic orifices slightly convex; a median longitudinal line extends from its base to a little beyond the middle. Pygidial area elongate-triangular, about twice as long as wide at the base, the apex narrowly rounded.

First abscissa of the radius almost as long as the second and third combined. Legs moderately spinose.

♂, 9 mm. long. Wings paler than in the ♀. Pubescence on the face and clypeus yellowish silvery. Second joint of the flagellum shorter than the third. Interocular distance on the vertex a little longer than the length of the first two joints of the flagellum. Pygidium trapezoidal, clothed with yellowish grey pubescence. Otherwise like the ♀.

Bulawayo, February to June; Natal. (R.M. and T.M. colls.)

N. cnemophila Cameron is only a small form of this species, differing in nothing but size (♀ 12 mm. long).

N. Braunsi n.sp.

♀, 11 mm. long. Head and thorax black, mandibles, palpi, anterior margin of the clypeus, scapes and all the legs, rusty red; the coxae black, the tegulae testaceous. Abdomen dark brownish red, the first two segments with a narrow median longitudinal and diffuse blackish band, the third blackish excepting its apical margin. Wings hyaline, the apical margin very faintly fuscous. Head and thorax with a short yellowish silvery pubescence, longer on the clypeus, lower half of face and posterior angles of the epinotum, thin and inconspicuous elsewhere. Legs and abdomen with a very fine greyish white pubescence, longer and forming faint transverse fasciae on the apical margins of the first

three tergites. Dull, the head and thorax microscopically and closely punctured, the anterior margin of the clypeus impressed and shining, the space between the longitudinal tori on the face almost impunctate and shining; sides of epinotum obliquely, the declivity transversely striate and dull, the striae stronger and farther apart on the posterior upper angles of the sides; the dorsum of the epinotum dull, coriaceous, with a more or less concentric and subelliptical rugosity superimposed. Abdomen dull above, the third to sixth sternites moderately shining and sparsely punctured. Pygidial area closely punctured and dull, except at the base where it is shining, sparsely punctured and almost glabrous, the apical margin with a row of brownish setae. Anterior margin of clypeus convex. Second joint of the flagellum not quite twice as long as the first, very little longer than the third. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. Pronotum depressed, linear above posteriorly, without a collar. Thorax fairly narrow, the mesonotum barely one-third wider than long; the epinotum as long as the mesonotum and as long as wide in the middle. The dorsum of the epinotum is distinctly convex transversely. Abdomen narrow, lanceolate, the pygidial area twice as long as wide at the base, the apex truncate. Legs moderately spinose, the calcar of the hind tibia two-thirds the length of the hind metatarsus. Anterior metatarsi with four short spines. First three abscissae of the radius subequal, the fourth not quite as long as the other three combined.

Salisbury, S.R. (G. A. K. Marshall), ex. coll. Brauns. Type in R.M. coll.

In the narrow thorax, the shining infrafrontal space and the shape of the epinotum this insect has the facies of a *Larva*, but the pygidial row of spines and the distinct pair of teeth on the inner margin of the mandibles and the longitudinal carinae on the posterior tibiae place it in the genus *Notogonidea*.

N. thysanomera Kohl. *Ann. K.K.N.H. Mus. Wien*, ix, p. 302, ♂. 1894.

♀, 11 mm. long. Black; the tegulae reddish yellow, all the legs (excluding the coxae and trochanters) bright ferruginous; the lower surface of the scapes reddish piceous. Wings hyaline, with a narrow fuscous apical border, the veins brown. Clypeus and lower half of the face with bright silvery pubescence. The rest of the head and thorax with a very fine and inconspicuous pubescence, yellowish grey on the mesonotum, dull white elsewhere. Abdomen with a pruinose pubescence, more silvery on the apical halves of the segments where it forms transverse fasciae, more conspicuous when viewed from behind. Pygidial area with short and dull golden hairs, the apical margin with a row of reddish yellow setae. Anterior margin of clypeus smooth and shining, the rest of the head in front closely and very finely punctured and dull, the back of the head rugulose. Mesonotum, scutellum and metanotum closely and finely punctured and dull, except the scutellum which is slightly shining, the mesopleurae finely rugulose. Epinotum dull, the dorsum widely and transversely striate, with a few anastomoses and a feeble median longitudinal carinula not reaching the apex; the sides of the epinotum obliquely striate on the anterior half, the declivity irregularly and transversely striate.

Abdomen above microscopically rugulose-punctate, the fourth and fifth segments more strongly punctured, the pygidial area three-quarters longer than wide at the base, slightly shining and strongly punctured. The ventral surface of the abdomen, except the first two sternites, slightly shining, finely punctured, with a few larger punctures interspersed. Interocular distance on the vertex a little less than the length of the first two joints of the flagellum; the second joint a little longer than the third. Dorsum of epinotum as long as the mesonotum, and as long as wide in the middle. The pygidial area rounded

at the apex. First and third abscissae of the radius subequal, the second two-thirds as long as the first.

♂, 9-10.5 mm. long. Colour, sculpture and pubescence as in the ♀, except the anterior femora which are red only over the apical third or fourth, and the middle and hind femora which are black on the basal half. The anterior and middle femora have a fine and outstanding whitish pubescence on their inner sides. The posterior femora are bluntly angulated a little distance from the base. Interocular distance on the vertex about equal to the length of the first two joints of the flagellum. The dorsum of the epinotum is more delicately sculptured than in the ♀. Ventral surface of abdomen almost dull, the apical segment narrowly excised in the middle. The first abscissa of the radius usually longer than the third, but the venation varies not a little. Otherwise like the ♀.

Gaboon, West Africa; S. Rhodesia and Natal. (R.M. and T.M. colls.)

N. thysanomera, race *usambarensis* Cameron.

N. usambarensis. Sjöstedt, *Kilimandjaro-Meru Exped.* p. 288, ♀. 1910.

This is only a race of *thysanomera*, from which it differs by the shorter interocular distance, which is a little less than the length of the second joint of the flagellum, and by the brownish pubescence of the pygidial area, the apical setae being dark red.

Mfongosi, Zululand (W. E. Jones). S.A.M. coll.

N. bidentata n.sp. (Fig. 49 a, b).

♀, 11.2 mm. long. Black; tarsi ferruginous, the basal joint over the greater part black. Pubescence on the clypeus and face silvery grey, on the rest of the head, the pro-mesonotum, declivity of epinotum and legs, very fine and grey. Abdomen with a pruinose pubescence similar to that of *N. sepulchralis*, which this insect strongly resembles. The whole body, except the anterior margin of the clypeus, dull; the head and pro-mesothorax closely and finely punctulate, the epinotum sculptured like that of *odontophora* Kohl, the abdomen including the pygidial area without sculpture, unless microscopic. Anterior margin of clypeus feebly convex. Second joint of the flagellum half as long again as the first, as long as the third but shorter than the fourth. Interocular distance on the vertex a trifle shorter than the length of the first two joints of the flagellum. Pronotum linear above posteriorly, without the lateral angles present in *odontophora*. Proportions of epinotum as in that species. Posterior tarsi long, one and three-fifths as long as the tibia; the claws of all the legs long, nearly as long as the last tarsal joint, and furnished with two small teeth set side by side a little behind the middle of the claw.

Wings hyaline, faintly fuscous, the venation similar to that of *odontophora*.

Bulawayo. July. Type in R.M. coll. This and the three following species would be placed in the genus *Motes* according to Kohl.

N. odontophora Kohl. *Ann. K.K.N.H. Mus.* ix, p. 298, ♀. 1894. (*Motes*). *Ibid.* xi, p. 351. 1896.

♀, 13 mm. long. Black; mandibles, anterior margin of the clypeus, scapes, the first four joints of the flagellum and the fifth underneath, the apex of the posterior tibiae inwardly, the apical margin of the third, and the whole of the

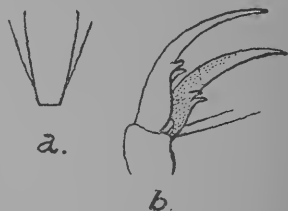


Fig. 49. Pygidium and claws of *N. bidentata*. a. $\times 16$, b. $\times 30$.

fourth to sixth abdominal segments, ferruginous; the tarsi reddish brown, the tegulae ferruginous behind. Face and clypeus with fine silvery pubescence. Thorax and apical margins of the first three tergites with an exceedingly fine or almost pollinose pubescence, on the epinotum a little longer and outstanding. Head and pro-mesothorax slightly shining, very finely and closely punctured. Epinotum rugose above, the rugae emphasised transversely, dull between the rugae, the sides fairly closely and obliquely striate, the declivity transversely so. Abdomen smooth and very shining, the first and second segments a little duller than the rest. Pygidial area narrow, its lateral margins subparallel, transversely truncate at the apex, feebly punctured.

Anterior margin of the clypeus feebly convex. Second joint of the flagellum about one-third longer than the first. Interocular distance on the vertex a little less than the length of the first two joints of the flagellum. The pronotum not linear above posteriorly, but with a distinct collar of which the lateral angles or shoulders are fairly prominent and rounded. Dorsum of epinotum parallel-sided, as long as wide, with a median longitudinal carinula which does not reach the apex. Abdomen lanceolate and fairly long. The claws of all the tarsi with a tooth near the middle. Wings very pale fusco-hyaline, a little darker beyond the second cubital cell. First abscissa of the radius nearly twice as long as the second, the latter a little shorter than the third, and as long as the space on the cubitus between the recurrent veins.

Anterior metatarsi with three or four short spines on the outer margin; the posterior tibiae distinctly longitudinally carinate on upper outer side. (Described from the type.)

Conakry, West Africa. Type in coll. Brauns.

A ♂ from Zululand (S.A. Mus. coll.) which I place with this species has the hind tibiae longitudinally carinate, the claws unarmed, and the fourth to seventh abdominal segments and the apical margin of the third, red. Scapes red in front, the flagellum black.

N. cyphononyx Kohl. *Loc. cit.* p. 299, ♀.

♀, 13 mm. long. Black; first three segments of the abdomen dark castaneous red, with an indistinct transverse band of black behind the apical margin of the first segment, and a spot on each side of the second, or, as in the type of the species, the whole abdomen red. Head and thorax clothed with a very fine, short and yellowish grey pubescence, not obscuring the sculpture, somewhat longer and silvery on the clypeus and face. Abdomen with a little whitish pubescence on the apical margins of the first three segments. Head, pro- and mesothorax, very finely, closely but distinctly punctured, slightly shining between the punctures. Dorsum of epinotum dull, transversely and fairly coarsely rugose, the sides closely and finely striate, between the rugae rugulose-punctate; a median longitudinal carinula extends from the base as far as the middle. Abdomen dull, microscopically rugulose-punctate. Anterior margin of clypeus feebly convex. Interocular distance on the vertex equal to a little more than the length of the first two joints of the flagellum (in the only specimen which I have seen, it is not more than the first two). Pygidial area narrow, the sides almost parallel, about twice as long as wide, microscopically punctured (appearing smooth to the naked eye), marginate laterally, truncate at the apex. Wings faintly fusco-hyaline, darker towards the apex. Second and third abscissae of the radius subequal, each shorter than the fourth. The claws of all the tarsi with a short tooth near the middle.

Chutes de Samlia, W. Africa; Salisbury. 1 ♀ (G. A. K. Marshall), coll. Brauns.

N. rugifera Turner. *Ann. Mag. N.H.* 1 (9), No. 5, p. 362, ♀. 1918.

"♀. Nigra; femoribus posticis ferrugineis; tarsis subtus brunneis; alis hyalinis, leviter infumatis, venis fusco-ferrugineis; unguiculis denticulatis. Long. 11 mm."

"♀. Clypeus clothed with delicate silver pubescence; third joint of flagellum twice as long as the first, the second distinctly shorter; eyes separated on the vertex by a distance about equal to the length of the third joint of the flagellum. Pronotum obliquely depressed, with a shallow longitudinal median line, the middle of the hind margin level with the mesonotum. Thorax opaque, scutellum and postscutellum shining. Median segment longer than broad, narrowed towards the apex; the dorsal surface coarsely, rugosely, transversely striated, with a distinct longitudinal carina; the sides of the segment closely obliquely striated; the face of the posterior truncation indistinctly transversely striated, with a deep median sulcus. Tergites 1-3 with a broad but ill-defined apical band of dull whitish pubescence; sixth tergite bare, delicately punctured, narrow, the sides converging towards the apex, which is very narrowly truncate; second sternite not swollen at the base. Radial cell obliquely truncate at the apex; first abscissa of the radius as long as the second and third combined. Tarsal unguis long, with a well-defined tooth near the middle. Comb of fore metatarsus almost obsolete."

Hab. Mabira Forest, Uganda.

N. denticulata Turner. *Ann. S.A. Mus.* xvii, Part 6, p. 496, ♀. 1920.

"♀. Nigra; palpis brunneis; mandibulis fusco-ferrugineis, apice nigris; femoribus tibiisque ferrugineis; tarsis calcaribusque fuscis, tergitis tribus basalibus fascia obscura apicali albido-sericea; alis sub-hyalinis, apice late fusco-hyalinis, venis fuscis; unguiculis in medio denticulatis. Long. 11 mm."

"♀. Clypeus and face clothed with short silver pubescence; clypeus short, the anterior margin almost transverse and narrowly depressed. Second joint of flagellum a little longer than the third; eyes separated on the vertex by a distance equal to the length of the second joint of the flagellum. Pronotum not reaching the level of the mesonotum; median segment slightly convex on the dorsal surface, opaque, finely, indistinctly and transversely striated, much longer than broad, the posterior truncation almost vertical, with a median longitudinal sulcus, the sides transversely striated, the striae obsolete in the middle and at the apex, the sides of the segment opaque and smooth, with delicate oblique striae in front. Sixth tergite subtriangular, the sides distinctly longer than the base, very narrowly rounded at the apex and clothed with sparse pale fulvous setae; the surface beneath the setae rather deeply punctured. Comb of the anterior tarsi not very long, the metatarsus with four spines. Inner spine of the hind calcaria equal to three-quarters of the length of the hind metatarsus. Tarsal unguis with a small tooth close to the middle. Second abscissa of the radius very short, not half as long as the third; radial cell rather narrowly truncate at the apex."

Hab. Stella Bush, Durban (Marley). November and January. Type in the S.A. Mus. coll.

N. Neavei Turner. *Ann. Mag. N.H.* xx (8), No. 118, p. 294, ♀. 1917.

"♀. Nigra; mandibulis, apice excepto, tarsisque fusco-ferrugineis; alis sordide hyalinis, venis nigris; fronte, clypeo, segmentisque dorsalibus 1-3 fascia indistincta apicali argenteo-pubescentibus; unguiculis dente armatis. Long. 16 mm."

"♀. Clypeus opaque, the apical margin shining and very narrowly and shallowly excised in the middle; eyes separated on the vertex by a distance

equal to about two-thirds of the length of the second joint of the flagellum. Mesonotum opaque, pruinose; with a delicate impressed line from the middle of the anterior margin, not reaching more than halfway to the middle of the segment; a similar short impressed line on each side before the tegulae. Scutellum smooth and slightly shining. Median segment longer than broad, margined at the apex; transversely striated, the striae distinct at the base, obsolete on the apical half; a very delicate longitudinal carina from the base not reaching the apex; the surface of the posterior truncation with a deep median sulcus, transversely striated at the sides, the striae obsolete in the middle. Abdomen pruinose; pygidial area rather broadly truncate at the apex, finely rugose, sparsely clothed with very short pubescence which changes according to the light from fuscous to pale golden, a few strong fuscous setae on the apical margin. Basal sternites pruinose; the second at the base with the usual structure of the genus. Comb of the anterior tarsus rather short, the basal joint with four spines; tarsal unguis long, with a small triangular tooth near the middle. First abscissa of the radius as long as the second and third combined, the fourth longer than the first; radial cell narrowly truncate at the apex; recurrent nervures very narrowly separated on the cubitus."

Hab. Mlanje, Nyasaland (S. A. Neave). December. Type in B.M. coll.

This species at a rough glance is deceptively like *N. sepulchralis* Gerst. However, the wings are a little darker, and the toothed claws sufficiently distinguish it from that species.

N. nigricans Walker, race *palumbula* Kohl. *List of Hymen. in Egypt*, p. 21, ♀. 1871.

Kohl. *Ann. K.K.N.H. Mus. Wien*, ix, p. 304, ♂. 1894.

N. punctipleura Cameron. Sjöstedt, *Kilimandjaro-Meru Exped.* p. 285, ♂. 1910.

♀, 7.5–8 mm. long. Black; wings hyaline, faintly fuscous over the apical third. Clypeus, face and back of the head with silvery pubescence, thorax with a very short, scanty and whitish pubescence; abdomen and legs with a thin and inconspicuous pruinose pubescence, not forming apical fasciae on the former.

Head and pronotum above fairly dull, microscopically and closely punctured, the sides of the pronotum finely rugose. Mesonotum dull, closely, finely but distinctly punctured; the mesopleurae nitidulous, sparsely and finely punctured. Scutellum and metanotum nitidulous and more finely punctured than the mesonotum. Dorsum and declivity of the epinotum reticulate-rugose, the rugae emphasised transversely, the sides obliquely striate. Abdomen nitidulous. Pygidial area closely and finely punctured, the sculpture hidden by a dense yellowish pubescence, the apical margin with a row of five or six short spines. Anterior margin of the clypeus transverse. Antennae fairly short, the second joint about half as long again as the first, and as long as the third. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half the first. Mesonotum one and a half times wider than long; epinotum as long as the mesonotum, a little shorter than wide in the middle, the dorsum with a median carinula which barely reaches the apex. Legs short and stout, moderately spinose; the anterior tarsi without a distinct comb, the metatarsus with a row of four spines on the outer margin. Second and third abscissae of the radius subequal, the fourth a little longer than the first, and nearly as long as the second and third together.

♂, 6 mm. Colour, sculpture and pubescence as in the ♀. Anterior margin of the clypeus slightly produced in the middle into a short lobe, angular on each side. Interocular distance on the vertex slightly less than the length of the first three joints of the flagellum. The second joint of the flagellum is a

little longer than the first and about as long as the third. Otherwise like the ♀.

Hab. West Africa to East Africa, and south as far as the Karroo.

I have not seen a specimen of the typical species, but Turner (*Ann. Mag. N.H.* ix (8), No. 112, p. 319) says of *pahumbula* that "this is merely the tropical subspecies of *nigricans*; the pygidial area of the female is narrower." He also synonymises Kohl's *sculpturata* (*Ann. K.K.N.H. Mus. Wien*, vii, p. 221, ♂, 1892) with Walker's species.

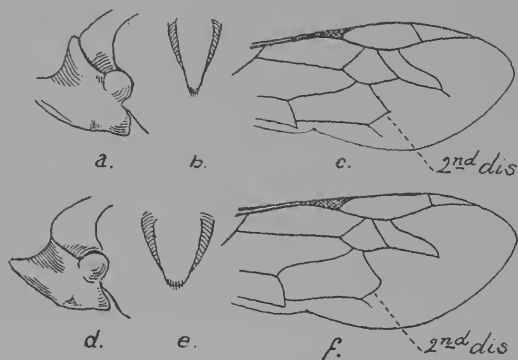


Fig. 50. *a.* pronotum, *b.* pygidium, *c.* apical half of front wing. *N. simulatrix*.
d. pronotum, *e.* pygidium, *f.* apical half of front wing. *N. sepulchralis*.

N. sepulchralis Gerst. (Fig. 50 *d, e, f*). *Monatsb. Akad. Wiss. Berlin*, p. 510, ♀, 1857.

N. argyropyga Costa. *Atti. Accad. Sc. Napoli*, vii, p. 16, ♀, ♂. 1875.

N. radialis Sauss. *Soc. entom.* ii, p. 17, ♂. 1887.

N. ancara Sauss. *Mitth. Schweiz. entom. Ges.* viii, p. 260, ♀. 1891.

N. antaca Sauss. *Hist. Madagascar*, xx, p. 505, ♀. 1892.

N. transvaalensis Cameron. *Ann. Trans. Mus.* ii, pp. 131-2. 1910.

N. brevicarinata Cameron. *Ibid.*

N. pretoriensis Cameron. *Ibid.*

N. erythrotoma Cameron. Sjöstedt, *Kilimandjaro-Meru Exp.* p. 286. 1910.

N. massaica Cameron. *Ibid.*

♀, 13-15 mm. long. Black; the tarsi reddish brown, the basal joint usually darker towards the base. Wings hyaline, slightly smoky, with a narrow apical fuscous border beyond the cells. Clypeus and face, back of the head and anterior femora below, with dense silvery pubescence, the thorax with a scanty and greyish pubescence, fairly short, and on the mesonotum confined to the lateral margins. Legs and abdomen pruinose, the abdomen with apical fasciae of greyish silvery pubescence on the first four tergites. Pygidial area covered with short, decumbent and yellowish grey setae, with a few long and finer hairs intermixed, the apical margin with a row of six reddish spines. Dull, microscopically and closely punctured; the dorsum of the epinotum very finely, closely and transversely striate, dull and reticulate between the striae, the sides of the epinotum dull, microscopically and closely punctate, the declivity finely and transversely aciculate, with a few short transverse rugae at the sides above. First three sternites dull, very finely and closely punctured, the fourth shining and finely punctured, the fifth and sixth very shining, sparsely and coarsely punctured. Anterior margin of the clypeus convex, slightly shining, with a feeble and very narrow median excision. Interocular distance on the

vertex about as long as the second joint of the flagellum; the second joint not quite twice as long as the first. Dorsum of epinotum as long as the mesonotum and as long as wide in the middle. Pygidial area widely rounded at the apex, elongate-triangular, about half as long again as wide at the base. The venation is variable, but as a rule the first abscissa of the radius is about as long as the second and third combined, the second much shorter than the third. Legs with reddish spines, the anterior metatarsi with four spines on the outer margin.

♂, 9-10 mm. long. Pubescence shorter than in the ♀, on the abdomen less silvery and forming narrower apical bands. The puncturation of the head and thorax is very fine but nevertheless less close and more distinct than in the ♀. The epinotum is much less distinctly striated. First joint of the flagellum two-thirds the length of the second. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. Apical dorsal segment of the abdomen widely truncate at the apex. Tarsi darker than in the ♀, almost black. Inner calcar of hind tibia three-quarters the length of the hind metatarsus. Otherwise like the ♀.

The commonest species of the genus in South Africa. Widely distributed throughout tropical and South Africa.

I have seen the types of Cameron's *transvaalensis*, *brevicarinata* and *pretoriensis* in the Transvaal Mus. coll., and his other two species *erythrotoma* and *massaica* have been synonymised with *sepulchralis* by Turner (B.M. coll.) (B.M. and T.M. colls.)

N. pompiliformis Panzer, race *intermedia* n.r. *Faun. Ins. Germ. Init.* 106, Heft 17. 1808.

♀, 9.5-10 mm. Very similar to *sepulchralis*, which it resembles in colour and pubescence. Apart from its smaller size and more slender shape, it differs from *sepulchralis* as follows.

Antennae more slender, the first joint of the flagellum half as long as the second, the latter a little longer than the third. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. In *sepulchralis* the pronotum has no collar, whereas in this species there is a short but distinct collar, raised in the middle and with rounded subrectangular shoulders. The epinotum is narrower, being a little longer than wide in the middle (as long as wide in *sepulchralis*). The dorsum of the epinotum is closely and transversely rugulose, with a few wavy longitudinal rugae on each side of the median carinula which is well-defined. The posterior margin of the dorsum and the declivity are transversely striate, the sides obliquely and closely striolate. The mesonotum has a distinct median impressed line which does not quite reach the middle of the segment. Only the first three tergites have apical fasciae of silvery pubescence; the abdomen is narrower and more lanceolate than in *sepulchralis*. The pygidial area is narrower, lanceolate, fully two and a half times longer than wide at the base, narrowly truncate at the apex, glabrous, shining, fairly strongly but sparsely punctured, the apical margin with a row of six black spines. Fourth to sixth sternites shining, the fourth and fifth on their apical halves, the sixth over its whole surface, strongly punctured. The inner calcar of the hind tibia is barely half as long as the hind metatarsus. The third cubital cell is less produced towards the apex of the wing, and is hardly longer on the cubitus than the second cubital cell (distinctly longer in *sepulchralis*).

♂, 5-7 mm. long. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. The second joint of the flagellum as long as the third and nearly twice as long as the first. Pronotum with the collar

very feebly developed, almost linear above posteriorly. Apical dorsal valve widely rounded at apex, the eighth sternite shallowly emarginate in the middle at the apex. Otherwise like the ♀.

Bulawayo, Salisbury, S.R.; Johannesburg, Willowmore, C.P. (R.M. and T.M. colls.)

This form is placed with *pompiliformis* i.sp. in the Brit. Mus. collection, but should be given subspecific rank. It is clear from Kohl's description of *pompiliformis* that this African form differs in important particulars as follows:

In the type of the species the interocular distance is less, being only as long as the second joint of the flagellum; the meso- and metapleurae are longitudinally rugulose or striate (in *intermedia* microscopically and closely punctured only), and the pygidial area has a cinereous pubescence. Moreover, the mesonotum lacks the median longitudinal impression which is present in *intermedia*, and also in *N. nigrita* Lep., another European species closely allied to *pompiliformis*. The latter is widely distributed, being found over the greater part of Southern Europe, West Asia and North Africa.

N. simulatrix n.sp. (Fig. 50 a, b, c).

♀, 16 mm. long. Deceptively like *sepulchralis*, from which it differs only in the following features:

The apical fasciae of silvery grey pile are confined to the first three tergites. The pygidial area is glabrous, slightly shining, finely and closely punctured at the base, the apical half and the lateral margins with sparser and large punctures, narrower and more elongate than in *sepulchralis*, three-fifths longer than wide at the base, the apex narrowly rounded, with five small reddish spines. The anterior margin of the clypeus is obtusely angular in the middle and not excised there. The antennal joints are more slender, and the interocular distance on the vertex is greater, being equal to the length of the second joint of the flagellum plus two-thirds of the first joint. The pronotum has a short but distinct collar, higher in the middle than at the sides. The epinotum is relatively shorter and more parallel-sided than in *sepulchralis*; the dorsum is dull, microscopically coriaceous-rugulose, with a median longitudinal carinula not reaching the middle, the posterior half at the sides with strong transverse rugae which do not extend inwards as far as the middle third; these rugae are continued over the sides obliquely where they become finer and closer; the declivity is dull, coriaceous-rugulose, the lateral margins with strong transverse rugae which are continued round to the sides of the segment for a short distance. The second recurrent vein is sharply angulated at about its middle (rounded in *sepulchralis*). The tarsal joints of the hind legs, especially the penultimate, are more slender and more deeply bifid.

Springvale, S.R. October. 1 ♀. Type in R.M. coll.

N. griseola n.sp. (Fig. 51 a).

♀, 16 mm. long. This is another species exceedingly like *sepulchralis*. Like that species it has apical pubescent fasciae on the first four tergites, but the fasciae are brighter, silvery instead of greyish silvery, and their posterior boundaries are more sharply defined. In addition, it differs also in the following characters:

The tarsi are darker, and the veins of the wings, excepting the costa and subcosta, are brownish ochreous, not fusco-ferruginous. The median excision of the clypeus is almost obsolete. The epinotum is shaped like that of *simulatrix*, more parallel-sided than in *sepulchralis*; its dorsum and declivity are microscopically reticulate-rugulose, the sides microscopically rugulose and without striae; the dorsum has a median longitudinal carinula nearly reaching the apex,

and a few short, feeble and transverse rugae near the base. The posterior lateral angles of the dorsum and the superior lateral angles of the declivity have a few short and strong rugae, shorter than in *simulatrix*, and not reaching inwards as far as the middle third of the dorsum.

Abdomen more elongate than in *sepulchralis*. The pygidial area is much narrower, nearly parallel-sided or semi-elliptical like the species of the "Motes" group, nearly twice as long as wide at the base, closely and finely punctured, densely clothed with fine, silky, pale brownish yellow pubescence, which entirely obscures the sculpture; the apex rounded and with numerous very minute brownish spines. The spines on the tibiae are black, not ferruginous as in *sepulchralis*, and the second recurrent vein is less rounded than in that species, which it otherwise resembles.

Bulawayo. May to July. 4 ♀♀.

(R.M. and T.M. colls. Type in the R.M. coll.)



Fig. 51. a. pygidium of *N. griseola*, $\times 9$; b. pygidium of *N. felina*, $\times 16$;
c. apical half of fore wing of *N. felina*, $\times 9$.

N. felina n.sp. (Fig. 51 b, c).

♀, 10–11 mm. long. This is another of the *sepulchralis* group. Black; tarsi pale ferruginous, the basal two-thirds of the anterior metatarsus fusco-ferruginous. Wings hyaline, with a narrow fuscous apical border which is darker than in *sepulchralis*, the veins blackish brown. Pubescence like that of *sepulchralis* but only the first three tergites have apical fasciae. The coarse decumbent pubescence of the pygidial area is less dense, greyer than in *sepulchralis* and intermixed with more numerous fine blackish hairs; the apical margin has a row of eight black spines. The spines on the tibiae are black, on the tarsi fusco-ferruginous. Clypeus, face, mesonotum and scutellum finely punctured, the punctures larger and farther apart than in *sepulchralis*, especially on the mesonotum and scutellum where the punctures are much smaller than the spaces between them (almost contiguous in *sepulchralis*). The dorsum of the epinotum is transversely striated, the striae stronger and farther apart than in *sepulchralis*, the spaces between almost smooth or at least not reticulate; there is a median carinula which does not extend beyond the middle of the segment; the declivity is slightly shining, widely and strongly striate transversely, the sides obliquely and very finely striolate or aciculate, the striae somewhat stronger in the middle; the posterior lateral angles of the dorsum have a few short rugae which do not extend over the sides nor reach the middle third of the dorsum. The pygidial area is relatively longer and less convex-sided than in *sepulchralis*. The spines on the anterior tarsi are more acuminate and longer. The antennal joints are more slender; the interocular distance on the vertex is equal to the length of the second joint of the flagellum. A deep sulcus extends from the anterior ocellus to the middle of the transverse torus; this sulcus is also present in *sepulchralis*, but in that species it is shallow and much narrower. The recurrent veins coalesce before their junction with the

cubitus, and in most cases sufficiently far away as to form a short stalk to the second discoidal cell; the second recurrent vein is rounded outwardly as in *sepulchralis*.

♂, 7.5–9 mm. long. Colour, sculpture and pubescence as in the ♀. Interocular distance on the vertex very nearly equal to the length of the first two joints of the flagellum. Seventh tergite like that of *sepulchralis* ♂, from which it may easily be distinguished by the colour of the tarsi, the sculpture and the venation.

Bulawayo, 4 ♀♀ and 8 ♂♂, March to July; Durban, 1 ♂; Sundays River, 1 ♂. (R.M. and T.M. colls. Types in the R.M. coll.)

N. angustiventris n.sp.

♀, 12–13 mm. long. Similar to *sepulchralis* but smaller, and easily distinguished, even to the naked eye, by its slenderer form and the narrower and more lanceolate abdomen. It differs from *sepulchralis* as follows:

Only the first three tergites have silvery pubescent fasciae on their apical margins. The puncturation of the head and mesonotum is a little stronger and less close. The dorsum of the epinotum is dull, finely but distinctly reticulate and without transverse striae except one or two very short ones near the extreme base. The extreme posterior lateral angles have a few short transverse rugae at the junction of the sides with the dorsum; the declivity is dull, transversely but not closely striato-rugose.

Abdomen narrow; fourth sternite as coarsely and sparsely punctured as the fifth and sixth, and, like them, very shining. The pygidial area is more finely punctured, narrower, three-quarters longer than wide at the base, the extreme apex rounded and fusco-ferruginous, with six small spines of the same colour. Spines on the tibiae black, on the tarsi fusco-ferruginous; the middle and hind tarsi are fusco-ferruginous, but the fore tarsi are darker, almost brown. The third transverse cubital vein is almost straight, not convex inwardly above as in *sepulchralis*.

♂, 7–8.5 mm. long. Tarsi black, wings faintly fusco-hyaline, darker than in the ♀. The sculpture is stronger and the punctures on the head and thorax deeper; the reticulation of the dorsum of the epinotum sharper, almost reticulate-punctate; the dorsum has also a few low and interrupted transverse rugae in the middle. The interocular distance on the vertex is equal to the length of the first two joints of the flagellum. Pubescent fasciae on the abdomen confined to the first three tergites as in the ♀. The latter feature distinguishes this species in the male sex from that of *sepulchralis*, to which it bears the closest resemblance.

Bulawayo. 7 ♀♀, 5 ♂♂. November to July. (R.M. and T.M. colls. Type in R.M. coll.)

N. miscophoides n.sp. (Fig. 52 a).

♀, 7.5 mm. long. Black; all the tarsi except the basal three-fourths of the first and the apical half of the fifth joints, pale yellowish red; mandibles ferruginous in the middle, last four joints of the flagellum yellowish brown underneath; pygidium and apical half of the penultimate segment red. Wings hyaline, with a faint fuscous cloud over the medial and submedial cells and another fuscous cloud over the cubital-discoidal cells. Dusted over with a very short and inconspicuous grey pubescence, a little longer on the face and clypeus; the abdomen with narrow and very faint apical fasciae on the first two tergites. Head and pro-mesonotum dull, the anterior margin of the clypeus shining. Scutellum, metanotum and pygidial area shining, the rest of the body dull. Head, mesonotum, scutellum and metanotum microscopically

and closely punctured, the pronotum rugulose, the dorsum of the epinotum closely and finely coriaceous-reticulate, with some longitudinal rugae superimposed, which are confined to the middle; the sides of the epinotum obliquely, and the declivity transversely, striolate. Pygidial area glabrous, triangular, a little longer than wide at the base, sparsely and strongly punctured, the apex rounded and furnished with a row of four dark ferruginous spines. Anterior margin of clypeus transverse, with a very small excision in the middle. Scape fairly long, as long as the first two joints of the flagellum; the second joint of the latter is twice as long as the first and a trifle longer than the third. Pronotum with a very short collar behind; the promesonotal suture deeply impressed. Dorsum of epinotum as long as the mesonotum, and as long as wide in the middle. First three sternites closely and finely punctured, feebly shining, the fourth finely but more sparsely punctured than the first three, the fifth and sixth shining, strongly and sparsely punctured. Calcar of hind tibia nearly as long as the metatarsus. The spines on the legs not long, the anterior metatarsus with four spines on the outer margin. Radial cell short, the second and third abscissae of the radius subequal, the fourth nearly half as long again as the third, the first shortest; the third cubital cell short, two-thirds shorter than the second, and not extending beyond the truncation of the radial cell, less than twice as long on the cubitus as on the radius.

A small species with the habitus of a *Miscophus*.

Bulawayo. July. 1 ♀. Type in R.M. coll.

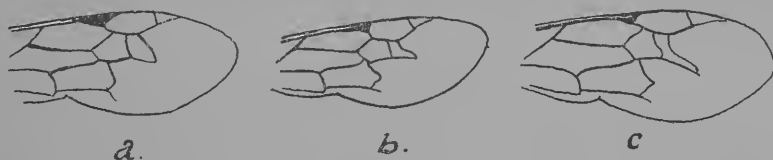


Fig. 52. Apical half of fore wing of: (a) *N. miscophoides*, (b) *N. minima*, (c) *N. gracilicornis*. $\times 9$.

N. minima n.sp. (Fig. 52 b).

♀, 6.5 mm. long. Very much like *N. miscophoides* from which it differs as follows:

The tarsi are a little darker. The wings pale fusco-hyaline, becoming darker towards the apex, without dark clouding at the base or on the cubito-discal area. The abdomen has very inconspicuous apical fasciae of silvery pubescence on the first three tergites, and is entirely black, including the pygidium. The pygidial area is finely and closely punctured, its apical half with short grey pubescence, the apex narrowly truncate and with four short yellowish brown spines. Third joint of the flagellum a little longer than the second, the latter half as long again as the first. Interocular distance the same as in *miscophoides*. The dorsum of the epinotum is more strongly rugose, the fundamental sculpture coriaceous only, not reticulate as well as in *miscophoides*. The second recurrent vein is angulated in the middle (convex only in *miscophoides*), and the third cubital cell is narrower, twice as long on the cubitus as on the radius. The first four sternites are very finely and closely punctured and only slightly shining, the fifth and sixth very shining, strongly and sparsely punctured.

♂, 5.5 mm. long. Tarsi entirely black. Sculpture of the head and thorax stronger than in the ♀, especially the dorsum of the epinotum which is reticulate-rugose. The first four tergites have narrow apical bands of greyish silvery pubescence. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. Otherwise like the ♀.

Hopfontein, S.R., August, 2 ♀♀; Bulawayo, June, 1 ♂. Type in R.M. coll.

N. gracilicornis n.sp. (Fig. 52 c).

♀, 7 mm. long. Black; the last two or three joints of the tarsi blackish red above, pale red below. Head and thorax with greyish silvery pubescence, fairly dense on the face, clypeus, sides and ventral surface of the thorax, scanty on the dorsum of the epinotum, mesonotum and scutellum. Abdomen with wide apical fasciae of similar pubescence on the first four tergites. Dorsum of epinotum dull, microscopically reticulate-rugulose, the declivity transversely, closely and finely striate and dull. The rest of the thorax and the head microscopically rugulose-reticulate. Interocular distance on the vertex a little greater than the length of the second joint of the flagellum. The latter is twice as long as the first, three times longer than its apical width, the whole flagellum distinctly slender. Pronotum not quite linear above posteriorly, but with a very short collar which is not much higher in the middle than at the sides. Dorsum of epinotum a little longer than the mesonotum and as long as wide in the middle. First four sternites dull, microscopically rugulose, the fifth shining, coarsely and sparsely punctured, the sixth shining, coarsely and closely punctured. Pygidial area like that of *sepulchralis* in sculpture, shape and pubescence, with six spines on the apical margin. Spines and calcaria of the legs black, the inner calcar of the hind tibia almost as long as the hind metatarsus.

Wings hyaline, with an apical fuscous border, the veins dark brown; the second recurrent vein obtusely angulated in the middle.

Bulawayo. April. 1 ♀. Type in R.M. coll.

PARALIRIS Kohl.

Verh. Zool. Bot. Ges. Wien, xxxiii, p. 361. 1883.

CHARACTERS. Anterior ocellus subconvex and indistinct; the posterior ocelli elongate, flattened and very indistinct. Mandibles without an excision on the outer margin, the inner margin with a dentiform angle before the middle and a blunt tooth near the apex. Pronotum somewhat triangular, deeply depressed below the level of the mesonotum at the sides and only slightly so in the middle. No epicnemium; episternal suture distinct. Epinotum wider than long, steep but not vertical behind. Pygidial area defined, glabrous and without spines on the apical margin. Second sternite as in *Notogonidea*.

Wings like those of *Notogonidea*, but the submedial cell is not much longer than the brachial, and the recurrent veins are closely approximated at their entrance into the second cubital cell. Posterior tibiae not longitudinally carinate, the anterior tibiae spined only at the end, the spine on the inner margin behind the middle, which is present in *Notogonidea* and *Liris*, being absent. The apical margins of the first four tergites depressed. Otherwise like *Notogonidea*.

Distribution. S. Africa.

P. Kriechbaumeri Kohl. *Loc. cit.* ♀, p. 362.

"♀, 15 mm. Black. Body and legs covered with fine, outstanding, long greyish white hairs. Wings tinged with brown and with a violaceous lustre. Clypeus large, flat, its anterior margin slightly raised in the middle, with a small excision. Infrafrontal area of the face smooth and shining. Interocular distance on the vertex equal to the length of the second joint of the flagellum; the latter is about three times as long as the first joint. Thorax elongate and somewhat flattened. Mesothorax shining, sparsely punctured. Legs long, the tibiae cylindrical, not longitudinally carinate. Third and fourth tarsal joints

of the front and middle legs not longer than wide, the two together as long as the last joint. Dorsum of the epinotum closely and transversely striate, the sides smooth and shining, punctured above at their junction with the dorsum. The abdominal segments, especially the last, sparsely punctured above; the puncturation of the sternites denser and very coarse. Pygidial area elongate-triangular, smooth, shining and sparsely punctured."

Cape. Type in the Munich Museum.

LIRIS Fab.

Syst. Piez. p. 227. 1804.

CHARACTERS. Mandibles not excised on the outer margin; inner margin bidentate in the ♀, unidentate in the ♂. Otherwise just like *Notogonidea*, which indeed might be treated as a subgenus of *Liris*.

KEY TO THE SPECIES OF *LIRIS*.

- (2) 1. Whole body clothed with a dense brassy golden pubescence.
haemorrhoidalis Fab.
- (1) 2. Pubescence not brassy golden.
- (4) 3. Mesonotum with a dense and deep fulvous pubescence, the abdomen black, with a scanty pruinose pubescence. Anterior margin of clypeus convex, not produced in the middle.
diabolica Smith
- (3) 4. Pubescence of thorax scanty and entirely black; median area of the clypeus produced.
atropos Grib.

L. haemorrhoidalis Fab. *Syst. Piez.* p. 198. 1804.

♀, 18–23 mm. long. Black; mandibles except their apices, scape and first three joints of the flagellum, apical half of the fifth and the whole of the sixth abdominal segments above (and more or less also at the sides and below), and all the legs, ferruginous; the coxae and trochanters, and basal inner half of the middle and hind femora, black. Head, pro-mesonotum, scutellum, metanotum and dorsal surface of the abdomen clothed with a very dense, adpressed and short pubescence, of a brassy golden colour, somewhat darker on the thorax than on the abdomen, in fresh specimens obscuring the sculpture. On the abdomen the pubescence is arranged in a chequered pattern not unlike that of *Tachytes mira*, *observabilis*, etc. The legs have the same brassy pubescence, but much less dense.

The pubescence on the mesopleurae merges into a greyish golden below. The first sternite and the flattened areas on each side of the second sternite dull and finely pubescent, the rest of the ventral segments shining and sparsely punctured. The epinotum is finely and transversely rugulose above and on the declivity, clothed with a paler and somewhat woolly pubescence, the sides dull, bare and obliquely striated, the striae strongest above near the dorsum. The rest of the body is microscopically punctured. Wings flavo-hyaline, with a fuscous marginal band beyond the radial cell which also extends over the hind wing; the veins ferruginous. Anterior margin of the clypeus convex. Scapes fairly long, a little longer than the first and second joints of the flagellum combined. The first joint of the flagellum is one and a half times longer than wide, the remaining joints all considerably longer than wide, the second twice as long as the first. Interocular distance on the vertex not quite equal to the length of the second joint of the flagellum. Temples well developed, seen from the side, about one-third as wide as the eyes. Pronotum without a collar, it slopes steeply downwards from the suture, where it is angular and highest in the middle. The suture between the scutellum and metanotum deeply im-

pressed. Dorsum of epinotum about as long as wide, convex transversely, the lateral margins between the stigmata and apex also convex, the sides and declivity subvertical. The dorsum of the epinotum has a median longitudinal impressed line extending from the base to the apex, and the oblique striae of the sides extend over the outer third of the dorsum. Pygidial area sharply marginate at the sides, roundly truncate at the apex, elongate-triangular, about half as long again as wide at the base, densely pubescent, the apical margin beset with a row of very small spines. All the tarsi and the middle and hind tibiae strongly spinose, the posterior tibiae tricarinate longitudinally. The anterior tibiae with a row of a few short spines on its apical half. Claws long. The recurrent veins coalesce at their junction with the cubitus.

♂, 10.5-16 mm. long. Colour, sculpture and pubescence as in the ♀, but the pubescence is slightly paler. All the joints of the flagellum longer than wide; the interocular distance on the vertex nearly equal to the length of the first two joints of the flagellum. The second joints of the posterior tarsi are dilated and flattened, half as wide as long, the inner margin convex. Sixth and seventh tergites covered with thin yellowish pubescence, the seventh arcuately emarginate at the apex. Otherwise like the ♀.

A common and widely distributed species, and also one of the most beautiful of the Larrinae. It is distributed from the Mediterranean region to the Cape. Both sexes are very partial to the honey-dew of aphides and may often be seen on plants infested with those insects. They also frequent the flowers of an Asclepiad, *Pentacrinum insipidum*. They are very active insects, and even when sunning themselves are ever on the alert, bobbing the head up and down in a very characteristic manner, ready to fly away on the instant. I have never taken it with its prey, which doubtless is an Orthopteran.

L. diabolica Smith. *Ann. Mag. N.H.* XII (4), p. 294, ♀. 1873.

L. opipara Kohl. *Ann. K.K.N.H. Mus. Wien*, IX, p. 297. 1894.

L. violaceipennis Cameron. *Sjöstedt, Kilimandjaro-Meru Exp.* 8, p. 285. 1910.

♀, 21-24 mm. long. Black; scape and first three to five joints of the flagellum and the anterior pair of legs, dark ferruginous. The rest of the flagellum more or less piceous. Head and mesonotum and posterior margin of the pronotum clothed with a dense adpressed and dark fulvous pubescence, entirely obscuring the sculpture, and fading to golden in worn specimens. Wings dark fuscous, with a strong violaceous lustre, the veins black. Epinotum with a very fine and sparse greyish brown pubescence. The rest of the body and legs with a microscopic pruinose bloom, very inconspicuous. Mesonotum, scutellum and metanotum microscopically punctured and slightly shining. Epinotum dull, microscopically coriaceous, the sides and declivity sparsely and obliquely striated, the striae extending over the lateral margins of the dorsum. Abdomen nitidulous, impunctate. Pygidial area shaped like that of *haemorrhoidalis*, clothed with dark chestnut-red pubescence, and with an apical row of dark red and short spines. Anterior margin of the clypeus convex, with a very small and narrow median excision. Second joint of the flagellum twice as long as the first, very little longer than the third. Interocular distance on the vertex is equal to the length of the second joint of the flagellum. Pronotum without a collar posteriorly. Mesonotum as long as the epinotum. The dorsum of the latter is about one-fifth wider across the stigmata than long in the middle, the brow of the declivity bordered by a thin raised margin. All the tarsi with a thin fulvous pubescence. Neuration of the wings similar to that of *haemorrhoidalis*. Third to fifth sternites finely and sparsely punctured, the punctures increasing in size towards the apex of the fifth, the sixth finely and fairly closely punctured.

♂, 15.5–18 mm. long. Median area of clypeus slightly produced, its anterior margin transverse with rectangular corners. The pubescence on the abdomen more pronounced than in the ♀, forming pale greyish transverse apical fasciae. The seventh tergite arcuately emarginate at the apex. Wings slightly paler than in the ♀.

Fairly common. S. Rhodesia, Natal and Transvaal. (R.M. and T.M. colls.)

L. atropos Gribodo (Fig. 53). *Mem. Accad. Sc. Bologna* (5), IV, p. 134, ♀. 1894.
L. africana Turner. *Ann. Mag. N.H.* xx (8), p. 295, ♀. 1917.

♀, 21 mm. long. Black; mandibles dark ferruginous, their apices black; tarsi dark brown. Wings fuscous, with a steely-blue tinge. Face and clypeus with a yellowish silvery pubescence. Epinotum with a very thin and exceedingly fine brownish pubescence. Abdomen dull, pruinose, with faint greyish apical transverse fasciae on the second, third and fourth tergites. Pygidial area elongate-triangular, narrowly truncate at the apex, covered with a dense piceous pubescence, the sides with a few long and exserted hairs, the apex with a row of stiff setae.

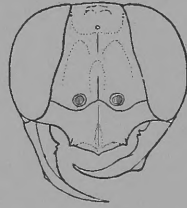


Fig. 53. Head of
Liris atropos.

Head and thorax microscopically and closely punctured. Epinotum dull, microscopically reticulate-coriaceous, transversely and rather feebly striate on the dorsum, vertically so on the upper half of the sides, transversely on the declivity, which is distinctly marginate all round. Ventral surface of abdomen sparsely and finely punctured. Median area of clypeus produced, carinate from base to apex, the carina ending in a minute angle on the apical margin, which is angular at each side. Interocular distance on the vertex equal to a little more than twice the length of the first joint of the flagellum; the second joint is almost twice as long as the first, very little longer than the third. Pronotum vertical behind, without a collar. Dorsum of epinotum as long as the mesonotum and scutellum combined, as long as wide at the apex, with a low median carina not reaching the apex. First abscissa of the radius as long as the second and third combined; the recurrent veins coalesce on the cubitus. All the tibiae and tarsi strongly spinose, the anterior metatarsus with four long spines on the outer margin.

Bulawayo, December to February; De la Rey, Transvaal (Brauns). (R.M. coll.)

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SYNDICS OF THE PRESS AT THE
CAMBRIDGE UNIVERSITY PRESS